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Thoroughly English:

County Natural History, c. 1660-1720

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University ID Number 0200818

Submitted in part fulfilment for the degree of PhD in History at the University of Warwick

July 2013

Contents

Abstract

This thesis focuses upon the county natural history, a genre of writing unique to England in the late seventeenth and early eighteenth century which spanned subjects which we might now refer to as genealogy, heraldry, cartography, botany, geology, and mineralogy, among others, while retaining a focus on a single county. It situates the genre firmly as a successor to local antiquarianism and chorography in Tudor and early Stuart England.

In focusing on a single genre which spans both historical and natural topics, methodologies of enquiry from several historiographic fields are utilized: particularly heavily drawn upon are historical geography, historical epistemology, as well as cultural histories of both history and religion. The thesis aims to make two specific historiographic contributions. Firstly, it demonstrates the value of integrating cultural histories of natural objects and the landscape with historical epistemology. As well as being an object of philosophical or "scientific" knowledge, nature and the landscape held significant cultural meaning, particularly when located in historical narratives and understood as part of God's world. This is exposed particularly clearly in chapter four's discussion of physico-theology's duality: both biblical and natural study combined to emplace God in the landscape. Secondly the thesis offers a reflection on the meanings of locality, place, and the construction of the landscape utilized in historical geography and the history of science. In this period both the nation and physical landscape were envisaged as constructed from discrete "parts", counties. This is set in the context of earlier, and better known, 'nation' constructions, Camden's construction of the nation by analogy to the human body around the turn of the seventeenth century, and Defoe's construction of the nation as a trade network centred upon London in 1724.

List of Illustrations

Declaration

This thesis is entirely my own work. The thesis has not been submitted for a degree at another university.

An article based on Chapter Four has been published as David Beck, 'Regional Natural History in England: Physico-Theology and the Exploration of Nature', *Society and Politics* 6 no. 2, special issue: God and the Order of Nature in Early Modern Thought (Nov. 2012), pp. 8-25.

Conventions

Except where indicated I have modernized spellings, but retained original capitalization, punctuation and italics.

Oxford Dictionary of National Biography entries have been used for biographical information throughout, and are cited collectively in the bibliography.

Introduction

Writing in Gresham College on June the 6th 1685 and worrying about what would happen to his collections should he die, John Aubrey (1626-1697) composed a preface for his manuscript notes towards the natural history of his home county, Wiltshire. Having been 'the first that ever made an essay of this kind for Wiltshire, and, for ought I know, in the nation' twenty-nine years earlier, Aubrey had added to these notes periodically throughout his life.[1] In this preface Aubrey muses on the main reason that he, and more recently others such as Robert Plot (bap. 1640-1696), spent so much time and effort surveying some of the counties of England:

> There is no nation abounds with greater variety of soils, plants and minerals than ours; and therefore it very well deserves to be surveyed… to take no notice at all of what is daily offered before our eyes is gross stupidity.[2]

Aubrey's work, nearly all 'pursued *con amore*' as the nineteenth-century antiquary John Britton put it,[3] demonstrates the extent of his nigh-on unbounded interest in the landscape. The genre which he and his (sometime) friend Robert Plot founded as a result of their shared interests, the county natural history, was short-lived and unique to England. Primarily, county natural historians were aiming to produce an encyclopaedia of their county, covering

[1] When they were transcribed by the Royal Society Clerk B G Cramer five years later, the resulting manuscript stretched to 373 neatly written demi-folio pages, now at Royal Society, MS 92, John Aubrey, Memoires of Naturall Remarques in the county of Wilts...

[2] John Aubrey, *The Natural History of Wiltshire*. Edited by J. Britton (London, 1847), 'preface', p. 5.

[3] John Britton, 'Editor's Preface', in ibid., p. vi.

subjects which we might now refer to as genealogy, heraldry, cartography, botany, geology, and mineralogy, among others. The above quote epitomises the local focus of the county natural history as a genre. It was the physical world 'offered before our eyes' on which they focused, as part of a nascent, but ultimately uncompleted, project to provide a natural historical survey of the parts of the nation.

As this thesis will show these works were both antiquarian endeavours and inspired by the "new science" of the Royal Society. They combined a vast number of areas of study into a focus upon the locality offered before them; and in the same way, my thesis provides a focused study of one genre of work while treading on ground traditionally occupied by both historians of science and cultural historians of history. The thesis seeks to make two main claims.

Firstly, rather than assessing how nature could be used by people, as most natural knowledge in the period is depicted as focusing upon, the county natural history illustrates the application of a historical sensibility to nature. By historical sensibility, I refer to the learnt habits of thought, practice and communication which were shared by the county natural historians as a group. These habits were heavily influenced by earlier antiquarians and centred upon the utilisation of narrative description, locating the objects being described in both place and chronology. This suggests that antiquarianism requires further consideration in our discussion of early modern natural knowledge, while supporting the general thrust of recent cultural histories of empiricism.

Secondly, in the period under consideration, from the Restoration in 1660 to around 1720, the English "nation" was envisaged as a construct of varied, unique and individual counties. Each county was itself a coherent whole, and thus a suitable object of study. The nation was simply an agglomeration of these individual counties, with no coherent internal structure of its own. This is notably different from earlier conceptions, such as William Camden's (1551-1623) portrayal of the rivers of the nation as its arteries; and equally different from later conceptions, for instance Daniel Defoe's (1660?-1731) portrayal of the nation as constructed for the benefit of commercial trade.

Together, these claims give a sense that the county natural history can be viewed as a particular style of empiricism which applied historical sensibilities to the natural world in the construction of the landscape. Their intention was to faithfully represent what was seen, to describe objects exactly, as part of a project to glorify God in surveying a part of his world. Like the characters I study, this thesis spans current disciplinary boundaries. In particular, it draws from and offers contributions to the history of science, the history of "history", and historical geography; the Introduction will survey three areas which speak across these historiographic divides. Firstly, the county natural histories will be located as indigenous, not just in the sense of local but also in the sense of locally-generated, reacting against a tendency inherent in Cooper's work and other intellectual history to seek external, global causation. Secondly, I discuss the construction of space and the landscape, arguing that the focus on *space* has blinded much historiography to *place*. Thirdly, the conception of utility which lies

at the heart of historical epistemologists' understanding of natural knowledge in this period is found to rest upon the now discredited disenchantment narrative. The final section of the Introduction will discuss the relationship between historical sensibility and natural study, suggesting an area of study which I hope goes some way to resolving the three issues I highlight above.

Indigenous knowledge

In *Inventing the Indigenous*, Alix Cooper attempts to map the emergence of the concept and practice of local natural history in early modern Europe. She argues that an 'invasion' of exotic goods through the sixteenth century caused a backlash among certain groups of intellectuals, who turned to the investigation of their local worlds as a means of reinforcing their own, local, identity.[4] She makes a convincing argument based on her Germanic sources, however is less convincing in extending the argument to elsewhere in Europe, including England.[5] A notable assumption of the work is that local identities are primarily encouraged by external events and "global" processes. In ascribing the active

[4] Alix Cooper, *Inventing the Indigenous: Local Knowledge and Natural History in Early Modern Europe* (Cambridge, 2007), esp. pp. 21-50, 116-151.

[5] A better example for Cooper's case in England would come from statements such as 'what is there worth wonder abroad in the world, whereof Nature hath not written a Copy in our Land?' from J. Childrey, *Britannia Baconica: or, The natural rarities of England, Scotland, & Wales. According as they are to be found in every shire. Historically related, according to the precepts of the Lord Bacon; methodically digested; and the causes of may of them philosophically attempted. With observations upon them, and deductions from them, whereby divers secrets in nature are discovered, and some things hitherto reckoned prodigies, are fain to confess the cause whence they proceed. Usefull for all ingenious men of what profession of quality soever* (London, 1662).

agency to the “external”, Cooper is following a long and currently popular meta-narrative, and applying it to the formation of indigenous, local natural history.[6]

Today, there is a particularly fluid conception of the meanings of terms such as 'local' and 'community' in the wake of globalisation- a communication and transportation revolution which is as important to the contemporary world as the voyages of discovery and expansion of print were to the early modern one. The split between local and universal appears to be a consistent tension. A central claim of this thesis is that locality has its own attractions, which, particularly in times of cultural (whether political, religious, or economic) turmoil, provides an agency of its own. Thus, rather than situating the emergence of county natural history as a ‘reaction’ against external events, I will demonstrate that county natural historians were engrossed in an attempt to survey specific parts of the nation, motivated by concerns which were at most national but in most cases bounded by a single county. As a result, I argue that their focus and interests in almost every reported observation, experiment, or instance was entirely local.

[6] See especially the seminal works of J. H. Elliott, *The Old World and the New, 1492-1650* (Cambridge, 1970); Stephen Greenblatt, *Marvelous possessions : the wonder of the New World* (Chicago, 1991); Edward W. Said, *Orientalism* (New York, 1979). Recent works placing the history of science in global context include: Harold J. Cook, *Matters of exchange : commerce, medicine, and science in the Dutch Golden Age* (New Haven, 2007); James Delbourgo and Nicholas Dew, *Science and empire in the Atlantic world* (New York, 2008); Pamela H. Smith and Paula Findlen (eds.), *Merchants & marvels : commerce, science and art in early modern Europe* (New York, 2002); Roy M. MacLeod, *Nature and empire : science and the colonial enterprise* (Chicago, 2000); Londa L. Schiebinger, *Plants and empire : colonial bioprospecting in the Atlantic world* (Cambridge, Mass., 2004).

My argument draws upon a long line of historiography which discusses the importance of the "local" in early modern England, beginning with the famous argument of Alan Everitt that England was made up of a vast number of isolated, local communities only unified by the county gentry.[7] While more recent historiography has demonstrated, particularly through an examination of news circulation and population mobility, that local areas were not as isolated as Everitt had argued, England was an undeniably heterogeneous place.[8] The poorly developed communication networks left many communities, especially but by no means exclusively in Cornwall, Devon, and upland areas, in a state of near-isolation throughout the period under consideration. This changed markedly through the middle of the eighteenth century, one of the things which makes the period 1660-1720 distinctive. In 1761 George Colman wrote, reflecting on this issue, in an occasional paper *The Genius*: 'It is scarce half a century ago, since the inhabitants of the distant counties [from London] were regarded as a species, almost as different from those of the metropolis, as the natives of the Cape of Good Hope'.[9] This heterogeneity has resulted in a discussion among local

[7] See especially Alan Everitt, *The community of Kent and the Great Rebellion, 1640-60* (Leicester, 1966); Alan Everitt, *Change in the provinces: the seventeenth century* (Leicester, 1969); Alan Everitt, *The local community and the Great Rebellion* (London, 1969).

[8] Alexandra Shepard and Phil Withington, *Communities in early modern England : networks, place, rhetoric* (Manchester, 2000). On news see Alastair James Bellany, *The politics of court scandal in early modern England : news culture and the Overbury affair, 1603-1666* (Cambridge, 2002); Joad Raymond, *The invention of the newspaper : English newsbooks, 1641-1649* (Oxford, 1996). On population mobility Barry Coward, *Social change and continuity : England 1550-1750* (London, 1997), pp. 7-9.

[9] George Colman, *Prose on several occasions : accompanied with some pieces in verse* (London, 1787), pp. 54-55. On this see: Paul Langford, *A polite and commercial people : England 1727-1783* (Oxford, 1989), p. 117.

historians as to how best to divide up the nation for our consideration: suggestions have ranged from the administrative (county, hundred, village), to the 'natural' (divided by rivers, agricultural regions), and no consensus has emerged.[10] John Adrian suggests, in his *Local Negotiations of English Nationhood 1570-1680* (2011), that the communication networks which did exist between local areas actually acted to encourage the recognition of and identification with locality. One of the ways in which this recognition was expressed through the seventeenth century, he demonstrates, was through local history; even national works like Camden's *Britannia* were read and annotated at a local, county level.[11]

It was only in England that a form of natural history based around the comprehensive description of a county became popular: in the Germanic and Italian states there were floras describing the plant life surrounding a town, but generally local natural history only became a regular pursuit when encountering a new environment.[12] The primary reason for this was the particular form of the pre-existing English traditions of local genealogy and county chorography which

[10] Alan Everitt, *Landscape and community in England* (London; Ronceverte, W. Va., 1985); Joan Thirsk, *Agricultural regions and agrarian history in England, 1500-1750* (Basingstoke, 1987); Anthony Fletcher, *A county community in peace and war : Sussex 1600-1660* (London, 1975); Beat A. Kümin, *The shaping of a community : the rise and reformation of the English parish, c.1400-1560* (Brookfield, 1996).

[11] John M. Adrian, *Local negotiations of English nationhood, 1570-1680* (Basingstoke, 2011), esp. pp. 1-3, 179-181.

[12] For the European case see: Cooper, *Inventing the Indigenous*; Paula Findlen, *Possessing nature : museums, collecting, and scientific culture in early modern Italy* (Berkeley, 1994); Paula Findlen, 'Francis Bacon and the reform of natural history in the seventeenth century', in Donald R. Kelly (ed.), *History and the disciplines : the reclassification of knowledge in early modern Europe* (Rochester, 1997). On natural history and discovery, see: A. L. Rice, *Voyages of discovery : a visual celebration of ten of the greatest natural history expeditions* (Richmond Hill, Ont., 2008); Smith and Findlen (eds.), *Merchants & marvels : commerce, science and art in early modern Europe*.

encouraged and were encouraged by the identification with local and county communities.[13] Genealogy, the divination of the line of a family from existing manuscript records, was undertaken by many as a route into the patronage networks of local gentlemen.[14] According to one of its seventeenth-century practitioners, chorography was 'an Art, whereby we be taught to describe any particular place, without relation unto the whole, delivering all things of note contained therein'.[15] As Helgerson has it, the most important feature of the genre was its opposition to chronicle history: chorography 'is the genre devoted to place, and chronicle is the genre devoted to time.'[16]

Around the mid-seventeenth century the term chorography fell out of fashion in England, and 'antiquarianism' came to largely supplant it semantically. Indeed, chorography and antiquarianism have been considered as interchangeable terms by historians of the period as a whole. Camden's

[13] On chorography see: Richard Helgerson, *Forms of nationhood : the Elizabethan writing of England* (Chicago, 1992), pp. 105-148; Lesley B. Cormack, '"Good Fences Make Good Neighbors": Geography as Self-Definition in Early Modern England', *ISIS* 82 no. 4 (1991), pp. 657-688; Richard Helgerson, 'The Land Speaks: Cartography, Chorography, and Subversion in Renaissance England', *Representations* no. 16 (1986); William K. Hall, "From chronicle to chorography : truth, narrative, and the antiquarian enterprise in Renaissance England" (PhD Thesis, University of North Carolina, 1995); Andrew McRae, *God speed the plough : the representation of agrarian England, 1500-1660* (Cambridge, 1996), pp. 231-226.

[14] D. R. Woolf, *The social circulation of the past : English historical culture 1500-1730* (Oxford, 2003), pp. 86-91.

[15] Arthur Hopton, *Speculum topographicum: or The topographicall glasse Containing the vse of the topographicall glasse. Theodelitus. Plaine table, and circumferentor. With many rules of geometry, astronomy, topography perspectiue, and hydrography* (London, 1611), sig. A1; on the origins of chorography in continental humanism see Cormack, '"Good Fences Make Good Neighbors": Geography as Self-Definition in Early Modern England', pp. 91-92.

[16] Helgerson, *Forms of nationhood : the Elizabethan writing of England*, p. 132.

Britannia (1586), for instance, has entirely legitimately been referred to as both by historical commentators.[17] I treat the two terms, antiquarianism and chorography, as synonyms with different connotations to the modern reader: hence I use antiquarianism when stressing historicity and/or precision, and chorography when stressing place.

More important for the emergence of county natural history than the strong tradition of antiquarianism/chorography was the sense of county community and pride which local study had fostered by the early seventeenth century, which enabled county natural historians to solicit patronage and later subscribers for their works. The technologies of information circulation available at the time had a part to play in this. Earlier local historical work had remained in manuscript and was only available through an active exchange of correspondence, particularly on a regional level.[18] However, because of the fact most intellectually-inclined gentry were educated at either Oxford or Cambridge, and went on to be involved in patronage networks in London in some way, this circulation was able to involve a wide range of interested parties through the early seventeenth century.[19] Interestingly, though, the county natural historians

[17] 'The first important English chorography' and 'the vade mecum of seventeenth century antiquarian studies' respectively in Charles W. J. Withers and R. J. Mayhew, 'Geography: Space, place and intellectual history in the eighteenth century', *Journal for Eighteenth-Century Studies* 34 no. 4 (2011), p. 38; Woolf, *The social circulation of the past*, p. 2.

[18] Christopher Dyer, 'Introduction', in Christopher Dyer and Catherine Richardson (eds), *William Dugdale, Historian, 1605-1686: His Life, His Writings and His County* (Woodbridge, 2009), pp. 4-6.

[19] Felicity Heal and Clive Holmes, *The gentry in England and Wales, 1500-1700* (Stanford, 1994), pp. 261-275.

were not engaged in correspondence with European counterparts, unlike many of their peers.

My geographic reach has therefore been determined by the scope of the genre about which I write- the *county* natural history was a style of writing only applied in the English context, and applied by people whose predominant concerns were located within the country they were studying at the time. While I would not go back to Conrad Russell's celebrated definition of the three kingdoms as distinct, reactive billiard balls clashing together,[20] nor would I suggest that the English context is suitable for all study. Neither do I find the artificial imposition of a "British" scope to be useful in an age where the word was used to describe colonists in Northern Ireland and the Caribbean while eschewed, even after the unification of England and Scotland in 1707, at home in England.[21] Neither are the Archipelagic, European or Global solutions[22] suitable for a study focusing on a group of men who did not travel outside England, nor demonstrate the interest which many of their contemporaries had in forming international correspondence networks. There will be occasional references to Edward Lhwyd (1659/60?-1709), a friend of John Morton (1671-1726), and his research into antiquities and especially fossils in Wales, and to the local antiquarianism of Robert Sibbald (1641-1722) in Scotland. Both of these men

[20] Conrad Russell, *The causes of the English Civil War : the Ford lectures delivered in the University of Oxford, 1987-1988* (Oxford, 1991), p. 27.

[21] David Armitage, *The ideological origins of the British Empire* (Cambridge, 2000), pp. 57-58; Nicholas P. Canny, *Making Ireland British, 1580-1650* (Oxford, 2001), p. 483.

[22] For a full discussion of alternative geographic scopes see: John Kerrigan, *Archipelagic English : literature, history, and politics, 1603-1707* (Oxford, 2008), pp. 4-13, 21-30.

have been subjects of study in their own right,[23] however they are only peripheral figures to an English study in this case. Likewise, while there is some evidence of tangential influence on the county natural history from continental thinkers, for instance in the contents of Charles Leigh's (1662-1701?) libraries and through figures such as John Ray (1627-1705), these influences were minor in comparison with the impact of English authors and cultural context, and will be treated as such.

The development of the conception of the English nation itself is ascribed a dialectical causality, with Richard Helgerson the most prominent advocate of an Elizabethan concept of England being formed through the works of a group of writers born in the mid-sixteenth century, defined against 'different' foreign nations.[24] Jan Broadway, in *No historie so meete*, discusses the links between these national histories and local history as it developed through the seventeenth century, arguing that improved maps and the provincial grammar school education system gave a sense of how the local fitted within the

[23] Recent work on Lhwyd includes: Brynley Roberts, 'The Legacy of Edward Lhwyd', *The Welsh history review. Cylchgrawn hanes Cymru.* (2010); Nancy Edwards, 'Edward Lhwyd and the Origins of Early Medieval Celtic Archaeology', *The Antiquaries Journal* 87 no. 3 (2007). And on Sibbald: Charles W. J. Withers, *Geography, science, and national identity : Scotland since 1520* (Cambridge, 2001); Charles W. J. Withers, 'Geography, science and national identity in early modern Britain: The Case of Scotland and the work of Sir Robert Sibbald (1641-1722)', *Annals of Science* 53 no. 1 (1996). Also see: Frank Emery, *Edward Lhwyd, F.R.S., 1660-1709* (Caerdydd, 1971); R. T. Gunther (ed.), *Early science in Oxford. Vol. 14, Life and letters of Edward Lhwyd* (Oxford, 1945); Roger Emerson, 'Sir Robert Sibbald, Kt, The Royal Society of Scotland and the origins of the Scottish enlightenment', *Annals of Science* 45 no. 1 (1988); James Maidment (ed.), *Remains of Sir Robert Sibbald, Knt., M.D. Containing his autobiography, Memoirs of the Royal College of Physicians, portions of his literary correspondence, and an account of his MSS.* (Edinburgh, 1837).

[24] Helgerson, *Forms of nationhood : the Elizabethan writing of England*.

national, as well as how the national fitted within the expanding world. In her opinion, the sense of county community or other local ties was primarily symbolic, in Peter Laslett's phrase, 'a medium of political consciousness' with little real-world impact.[25] The one area in which local history is given an important role is not the construction of the nation, but as will be discussed later the development of forms of testimony through the "historical revolution", with oral tradition and chorographic investigation of the physical landscape being given authority alongside humanist textual investigation of local records and references to locales from general texts.[26] But even here, by the end of the seventeenth century, as Kidd, Fox and Woolf have all argued, the national past is seen to take an increasingly comprehensive role, dominating the study of the local.

In the preface to the second edition of her *Britons*, Colley states that her work was in part a reaction against the tendency of her fellow historians to focus upon 'division and contest in the British past', to look for unity where previously there had been a story of discord.[27] In many ways this thesis is similarly reacting

[25] Jan Broadway, *'No historie so meete' : gentry culture and the development of local history in Elizabethan and early Stuart England* (Manchester, 2006), pp. 108-109.

[26] This is best seen in biographical studies, for example: Barrett L. Beer, *Tudor England observed : the world of John Stow* (Stroud, 1998); Ian Anders Gadd and Alexandra Gillespie, *John Stow (1525-1605) and the making of the English past : studies in early modern culture and the history of the book* (London, 2004); Wyman H. Herendeen, *William Camden : a life in context* (Woodbridge, 2007); Michael Hunter, *John Aubrey and the Realm of Learning* (New York, 1975); C. J. Wright, *Sir Robert Cotton as collector : essays on an early Stuart courtier and his legacy* (London, 1997); Kevin Sharpe, *Sir Robert Cotton, 1586-1631 : history and politics in early modern England* (Oxford, 1979); Sarah Tyacke and John Huddy, *Christopher Saxton and Tudor map-making* (London, 1980).

[27] Linda Colley, *Britons : forging the nation, 1707-1837* (New Haven, 2005), 'preface', p. xi.

against the current tendency for history, and especially "intellectual" history to look for unity and external causes, seeking instead to focus on the local agents of change within England and its counties. In addition to Cooper and most historians of science who turn to external causes when explaining the emergence of local natural history, most historians of history discuss local history through the seventeenth century only insofar as it contributes to discussions of the developing concept of nation-hood, and to the methodologies by which historical discussion took place on the national scale. By contrast, this thesis argues that locality was the focus of investigation; county natural history looked for differences in the "landscape" within a county, and simply assumed that differences were present across the country.

The Construction of Space and the Landscape since the Linguistic Turn

Our conception of the landscape is that of a complex system of signs and symbols waiting to be deciphered, as Anglophone geographers have argued since the 1950s, and has been evident more popularly since the 1980s.[28] Cultural geography has situated the landscape, as with other spatial sites, as a text which was 'produced', to use the terminology of the Marxist historian of space Henri Lefebvre, by the culture of the individual making the description. In the cultural production of the landscape each generation 'writes' its own preconceptions and

[28] Denis E. Cosgrove and Stephen Daniels, *The Iconography of landscape : essays on the symbolic representation, design, and use of past environments* (Cambridge, 1988); Christopher Y. Tilley, *A phenomenology of landscape : places, paths, and monuments* (Oxford, 1994); Peter J. Ucko and Robert Layton (eds.), *The archaeology and anthropology of landscape : shaping your landscape* (London, 1999).

values onto, or into, the natural world around them, and so the landscape is best understood as both geographical (spatial) and historical (temporal) in nature; indeed in *The Making of the English Landscape* W. G. Hoskins refers to the landscape as 'the richest historical record we possess'.[29] We can see this in the landscape around us everyday, both the built landscape, where the historical elements are perhaps most obvious, and the natural landscape in the remaining laid hedgerows and coppiced woodlands (whether still coppiced or outgrown). By representing the landscape as a historical feature, therefore, its exploration and description can profitably be used as a means to access the past.[30] This is especially so in the late seventeenth century, a period in which geographical discourse permeated through all of the sciences and beyond.[31]

Two recent works of historical geography expose the value of applying this proposition and associated methodologies for the study of the early modern world and its interactions with the landscape. Nicola Whyte in *Inhabiting the Landscape: Place, Custom and Memory 1500-1800* (2009) argues that ordinary people's experiences of the landscape were mediated through religious understanding, collective memories, and especially the local history of enclosure. That is to say that changing religious understandings would qualitatively alter the way that people, educated or not, experienced the landscape around them; and

[29] W. G. Hoskins, *The making of the English landscape* (London, 1955), p. 14.

[30] See for example: Ian Whyte, *Landscape and history since 1500* (London, 2002); Alan R. H. Baker, *Geography and history : bridging the divide* (Cambridge, 2003); Nicola Whyte, *Inhabiting the landscape : place, custom and memory, 1500-1800* (Oxford, 2009).

[31] Richard Sorrenson, 'The Ship as a Scientific Instrument in the Eighteenth Century', *OSIRIS* 11 (1996), p. 221.

that this process was developmental and evolutionary. This sense of an evolving, rather than suddenly shifting, change in the experience of the landscape gives an increased space for contestation. As such, the overlapping and competing meanings which are read from the landscape are also envisioned as sites of political contestation, as Walsham's recent *Reformation of the Landscape* (2011) demonstrates regarding religious interpretation of the landscape. She uses the landscape as 'a fruitful arena in which to examine the parallel Reformations, radical and Catholic, which ran alongside versions that became institutionalised.'[32]

The majority of recent investigations into the exploration of the landscape in the early modern world have shared an interest born of the linguistic turn and brought into historical studies via the discipline of cultural geography. Mike Crang has defined one of the aims of cultural geography as an attempt to understand 'how cultures make sense of space'[33]; historical geography applies the same questioning to the past, perhaps best represented by the research question: 'how did early modern people think about particular kinds of habitat, space, and environment?'[34] That is to say, the primary historical goal is to search for the keywords through which people thought about defined "kinds" of space and the environment around them, with an important

[32] Alexandra Walsham, *The reformation of the landscape : religion, identity, and memory in early modern Britain and Ireland* (Oxford, 2011), p. 10.

[33] Mike Crang, *Cultural geography* (London, 1998), p. 2.

[34] Julie Sanders, *The cultural geography of early modern drama, 1620-1650* (Cambridge, 2011), p. 11.

secondary aim being to translate those keywords into something intelligible to a present-day audience.[35]

In part, this historiographic focus is related to the ongoing influence of Skinner's argument that 'the understanding of texts presupposes the grasp both of what they were intended to mean and how this meaning was intended to be taken… the appropriate methodology is…the recovery of intentions.'[36] Skinner draws a parallel between the early modern 'art' of rhetoric and the theories and methodologies through which historians read texts. He argues that this attention to linguistic use allows us to recover the action of language, both direct and indirect, explicit and implicit.[37] The assumption is that an individual can choose from several linguistic options when they are making an argument, or even describing an event, and that the choices they make can be used to discern their intentions.[38]

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[35] James Turner, *The politics of landscape : rural scenery and society in English poetry, 1630-1660* (Cambridge, Mass., 1979); Garrett A. Sullivan, *The drama of landscape : land, property, and social relations on the early modern stage* (Stanford, 1998); Sanders, *The cultural geography of early modern drama*; James M. Sutton, *Materializing space at an early modern prodigy house : the Cecils at Theobalds, 1564-1607* (Aldershot, 2004); Mary Floyd-Wilson and Garrett A. Sullivan, *Embodiment and environment in early modern drama and performance* (Evanston, Ill., 2006); Mary Floyd-Wilson and Garrett A. Sullivan, *Environment and embodiment in early modern England* (Basingstoke, 2007).

[36] Quentin Skinner, 'Meaning and Understanding in the History of Ideas', *History and Theory* 8 no. 1 (1969), pp. 48-49.

[37] Quentin Skinner, *Reason and rhetoric in the philosophy of Hobbes* (Cambridge, 1996); Kari Palonen, *Quentin Skinner : history, politics, rhetoric* (Cambridge, 2003).

[38] Skinner has been most influential in the many works looking at political discourse and at political literature in the period through new historicist eyes: Stephen Greenblatt, *Renaissance self-fashioning : from More to Shakespeare* (Chicago, 1980); Kevin Sharpe and Steven N. Zwicker, *Politics of discourse : the literature and history of seventeenth-century England* (Berkeley, 1987); David Norbrook, *Writing the English Republic : poetry, rhetoric, and politics, 1627-1660* (Cambridge, 1999). On Skinner's influence in the

In many ways this methodology, shared by new historicist and literary scholars harks back to R. G. Collingwood's thesis that the proper aim of history is to re-think, in one's own mind, the thoughts of the people whom you are studying.[39] The underlying aim of much recent work in political discourse can be taken as uncovering the intentions which individuals and groups had when they chose particular modes of discourse, particular languages. Several critiques present themselves. Firstly, many postmodern writers would argue that language is in itself the determining factor: individuals are not making a choice but rather being influenced, and their actions determined, by the language around them.[40] I shall pick up on the idea of an influential linguistic context in a moment, but largely ignore ideas of linguistic determinism. Secondly, the Skinnerian turn was primarily interested in the meaning of major texts in the minds of their writers, ignoring the perceptions of the readers and the realm of more minor discourses.[41] This critique, as my focus upon minor works may hint, is a fair one, and one which recent historiography has largely rectified through the history of politics and science. A third critique which I offer is that there is not a binary opposition between "determinism" and "intention": it is entirely possible, as

history of science see Steven Shapin, *A social history of truth : civility and science in seventeenth-century England* (Chicago, 1994), pp. xxi-xxii.

[39] R. G. Collingwood and T. M. Knox, *The idea of history* (Oxford, 1946), pp. 205-231.

[40] Dror Wahrman, 'The new political history: A review essay', *Social history.* 21 no. 3 (1996), pp. 343-354.

[41] Kevin Sharpe and Steven N. Zwicker, *Reading, society, and politics in early modern England* (Cambridge, 2003); James Raven, Helen Small, and Naomi Tadmor, *The practice and representation of reading in England* (Cambridge, 1996); Roger Chartier, *The order of books : readers, authors, and libraries in Europe between the fourteenth and eighteenth centuries* (Stanford, 1994); Richard Ashcraft, *Revolutionary politics & Locke's two treatises of government* (Princeton, N.J., 1986), p. 7.

historians of philosophy have demonstrated,[42] to accept that people can mean things they can't think without making the assumption that the language they use is determining their meaning.

These critiques together make the recovery of intentions an insufficient and problematic historical goal; though I entirely agree that the use of language can tell us a great deal about the society in which it was used. However, throughout this thesis I have very carefully avoided suggesting that the *intention* of Plot, Aubrey, Leigh and the others was to demonstrate the historical sensibility and moralisations which are described, much as I wouldn't accuse natural historians today who are "mapping" species extinction of intentionally focusing on the potential for *loss* and the need for *intervention*. As will be shown this line is crossed occasionally, but in the main I intend to treat the narrative and descriptive techniques used by county natural historians and their moral content as a *reflection* of wider cultural trends, rather than an intentional *political* move. As a result, a significant aim of this thesis is to locate and translate the keywords and linguistic concepts used by the county natural historians in both the religious and medical discussions of the landscape. My argument is that the study of the landscape, an ostensibly non-political object, set within an intellectual environment which prided itself (if at times rhetorically) on its divorce from partisanship, leads to the implicit naturalisation of the culture of the times, and

[42] Michael Della Rocca, *Representation and the mind-body problem in Spinoza* (New York, 1996), esp. pp. 123-127.

that it can at times be separated from arenas in which these same men *were* intentionally active in a broadly-defined political sense.

It is a narrative of keywords and their transliterations regarding the cultural landscape, emerging from new historicist and linguistic studies, which surrounds this thesis's investigations, and which will now be summarised with reference to work that has been carried out on Camden's *Britannia* and Defoe's *Tour*. To make the point briefly I will just mention two aspects of each work: first regarding the structure of the text, and secondly a couple of examples of the language used by the author. William Camden, in his *Britannia* (1586), claims that: 'Countries are divided by Geographers either Naturally, according to the course of rivers and interpose of mountains; or Nationally, according as the people inhabit them; or Diversely and Civilly, according to the will and jurisdiction of the Prince.'[43] This was not an either/or choice: Camden used the shires (civilly) to divide his work into chapters, and the chapters themselves were grouped together based on the people who had formerly inhabited them (nationally) and the physical structure of the landscape (naturally). Therefore, to justify the description of Gloucestershire and Oxfordshire together Camden 'returns to the head of Tamis and the salt water of Severn, and there view the Dobuni, who in ancient times inhabited those parts which now are termed

[43] William Camden, *Britain, or A Chorographical Description of the Most flourishing Kingdomes, England, Scotland, and Ireland, and the lands adjoining, out of the depth of Antiquitie: Beutified with Mappes of the several Shires of England* (London, 1610), p. 154.

Gloucestershire and Oxfordshire.'[44] Daniel Defoe's *Tour thro' the Whole Island of Great Britain*, first published in 1724-6, describes a country from the perspective of a narrator, assumed to be Defoe himself, who takes several tours outward from London, apparently describing with reverent impartiality what he sees as he travels the country. It gives an impression of Britain as a trading nation, with each of these tours planned to encompass one network, each of which centred on London. As Defoe's narrator envisions it, 'London consumes all, circulates all, exports all, and at last pays for all, and this is trade', indeed, the city supports the country and in turn 'Europe at least, if not the whole trading World'.[45]

The importance of each of these structures is the analogous representation of the nation they imply: Camden sees the nation as a body divided "naturally" by rivers, the figurative arteries of the landscape; Defoe sees the nation as a coherent trading system. As Betty Schellenberg has pointed out, the structuring of Defoe's tour in this way, as a series of circuits emanating from the heart of Defoe's nation, London, links transportation with the 'internal organic coherence' of the national landscape.[46] That is to say, his touring strategy and therefore the narrative that the book puts forward only makes sense *if* one takes trade and transport as the organising principle. The same can be said of

[44] Ibid., p. 354.

[45] Daniel Defoe, *The complete English tradesman: directing him in the several parts and progressions of trade* (London, 1727), vol. 2, pp. 140-142. This work is widely seen as vital to understanding the Tour, being quoted in the introductions to both editions of Defoe's tour I have consulted (G. D. H. Cole ed., 1927; Yale University Press 1991), and misquoted as from the *Tour* itself in several articles.

[46] Betty A. Schellenberg, 'Imagining the Nation in Defoe's a Tour Thro' the Whole Island of Great Britain', *ELH* 62 no. 2 (1995), p. 302.

Camden, whose strategy only makes sense given the existence of an analogous relationship between body and nation. The language used by the two authors further reinforces this viewpoint. Defoe's narrator, for instance, presents his comments to further this image of Britain as a natural trading nation: the manufacture of linen was 'first planted'[47] in Maidstone 'at the Beginning of the Reformation', its growth as inevitable of that of a tree in fertile soil; the county of Cheshire is turned over to cheesemaking because 'the grass they say, has a peculiar richness in it, which disposes the creatures to give a great quantity of milk, and that very sweet and good'[48]. In both cases, the construction of the landscape is taken to be implicitly meaningful and moralistic, arguing for a world-view with all that entails. For Defoe society and nature *should* both organise themselves in efficient patterns for trading, if they follow their *true "*natures".

To my knowledge the narrative of the English conception of the landscape between Camden and Defoe has not been told *through* the period in an explicit manner. But at the same time Schellenberg's argument is a well-known one, suggesting a transition from the use of metaphorical rivers and an analogous relationship between body and nation to the dominance of trade over nature occurring through the latter seventeenth century.[49] The question asked

[47] Daniel Defoe, *A tour through the island of Great Britain. Divided into circuits or journies...* (London, 1724-6), vol. 1, p. 158.

[48] Ibid., vol. 2, p. 394.

[49] Explained particularly clearly in Lorraine Daston, 'The Nature of Nature in Early Modern Europe', *Configurations* 6 no. 2 (1998), esp. 150-151. Important works include: Earl R. Wasserman, 'Nature Moralized: The Divine Analogy in the Eighteenth Century', *ELH* 20 no. 1 (1953); M. Foucault, *The order of things: an archaeology of the human*

by Schellenberg regarding the construction of the nation is many ways analogous to the one mentioned as typical of 'newer' historical geography above: "how did early modern people think about particular kinds of habitat, space, and environment, constructed or otherwise?" The point I wish to draw out about this methodology, which is especially representative of recent work discussing the early modern study of the landscape in drawing upon linguistic and new historicist study, is the focus on "kinds". This is an essentialist methodology, seeking to identify the traits common to each 'kind' of landscape in order to define and contrast the different kinds. In the case of Camden and Defoe, then, we have a body-nation metaphor contrasted with a trading one, each signifying a different 'kind' of culturally constructed landscape as put together in a coherent and unified manner by the author.

As regards historical geography, the focus upon kinds has, I believe, emerged from the conceptions of space employed rather than an intentional critical decision by the historians.[50] Perhaps the most influential thinker on the conception of space employed by Walsham, Whyte and others has been Henri Lefebvre, whose *The Production of Space* is considered 'a vital theoretical text for recent cultural geography'[51]. Any particular 'kind' of space is understood as a cultural construction created through practices which in turn are encoded with the cultural, aesthetic and social relations of the practitioner. The job of the

sciences (London, 1989); Alexandre Koyré, *From the closed world to the infinite universe* (Baltimore, 1957).

[50] See, on the landscape as space Walsham, *The reformation of the landscape*, pp. 5-8.

[51] Andrew Thacker, *Moving through modernity : space and geography in modernism* (Manchester, 2003), p. 16.

historian, then, is to identify the conditions which brought about that 'kind' of space, and its effects. In Lefebvre's case this understanding is supplied by Marxist relations of production; Foucault[52] and De Certeau utilise descriptions of spatial practice in a similar vein while giving power relations or psychoanalysis the explanatory role. But in each case the city, Benthamite prison, and home[53] are presented as 'kinds' of space to be classified and understood in relation to a wider historical theory. Likewise, in the new cultural geography, we see that examinations of the landscape are undertaken with language and practice taking centre stage as the explanatory force guiding the interactions between the sites examined. For instance, in a study of the representation of the landscape in early modern drama, Sanders examines 'playhouses… households, gardens, estates, city streets, rivers, and forests' through 'the material conditions of performance… [and the] force fields of memory and collective belief' expressed through dramatic texts.[54]

I argue that this conception of space as something to be understood through 'kinds' is to the detriment of our understanding of locality. While the reading of how Camden and Defoe used the space of the nation presented above is entirely justifiable and representative of a range of literature produced in the

[52] For Foucault's influence on geography see: Jeremy W. Crampton and Stuart Elden, *Space, knowledge and power : Foucault and geography* (Aldershot, 2007).

[53] Henri Lefebvre, *The production of space* (Oxford, 1996); Michel Foucault, *Discipline and punish : the birth of the prison* (New York, 1977); Michel de Certeau, *The practice of everyday life* (Berkeley, 1984).

[54] Sanders, *The cultural geography of early modern drama*.

two periods,[55] the focus on the *national space* in our understanding misses a key element of the reception and meaning even of such national works. As John Adrian has recently shown, most readers of Camden read his work purely for information about their locale. While the idea(l) of entirely insular communities at any level has rightly been discarded, Adrian demonstrates the centrality of concepts of heterogeneity to the national identity which was being forged in the seventeenth century. For Adrian, the 'local' itself can be considered as a 'kind' in the model of space outlined above, with properties sometimes including idealisation, nostalgia, and fragility; but with an intrinsic epistemological, political and cultural value, drawn from its relation to the national and varying through time. [56]

So as it stands, I suggest the 'spatial turn', historical geography, has given us the basis of a persuasive and interesting account of the cultural meanings of national and/or global narratives of the landscape to the early-seventeenth and from the early-eighteenth centuries, the 'keywords'. However, in the intervening period, as this thesis will show, the study of the landscape in

[55] Similar narratives could be constructed from the examples of Henry Fielding, *The journal of a voyage to Lisbon* (London, 1755); John Speed, *The theatre of the empire of Great Britain, presenting an exact geography of England, Scotland, Ireland, and the Iles adjoining: With the Shires, Hundreds, Cities and Shire-towns, within the Kingdome of England, divided and described* (London, 1611); Andrew Henderson, *A letter to Dr. Samuel Johnson on his Journey to the Western Isles* (London, 1775); William Lambarde, *A perambulation of Kent conteining the description, hystorie, and customes of that shyre. Collected and written (for the most part) in the yeare. 1570. by William Lambard of Lincolnes Inne Gent. and nowe increased by the addition of some things which the authour him selfe hath obserued since that time* (London, 1576); T. Smollett and R. Baldwin, *Travels through France and Italy...With a particular description of the town, territory, and climate of Nice* (London, 1766); John Norden, *Speculum Britanniae. The first parte: An historical, & chorographicall description of Middlesex...* (London, 1593).

[56] Adrian, *Local negotiations of English nationhood*, esp. pp. 1-3, 15-19, 34-43.

England took place in a more localised fashion, and with the county natural history we see an increased focus on particular *places*, and on *narrative* without an embedded spatial construction or set of keywords to be usefully gleaned. A 2011 article by Charles Withers and Robert Mayhew entitled 'Geography: Space, Place and Intellectual History in the Eighteenth Century', argues that thinking geographically is now central to our understanding of eighteenth century intellectual culture, and so demonstrates that much remains to be done to integrate a nuanced understanding of 'place' into historical geography. With the exception of the title, "place" is only used as a concept twice and is not analysed in any depth, while nuanced readings of space, spatial and spatiality predominate.[57]

My suggestion, which I will sketch out now and employ throughout the thesis, is that we can usefully employ these two terms (space and place) in our investigation of the meaning of specific features of the landscape in county natural historical writing, and that doing so will reveal a more nuanced, more interesting, and, significantly, a more relatable and meaningful picture of the cultural importance of the landscape in the period from 1660-1720. My distinction of space from place has been enhanced by reading works of philosophy by Edward Casey and J. E. Malpas, both of whom make the point that it is particular places which we inhabit and to which we as individuals respond,

[57] Withers and Mayhew, 'Geography: Space, place and intellectual history'.

rather than stereotypical or idealised spaces.[58] Malpas states 'place is… distinguished from mere location through being understood as a matter of human response to physical surroundings or locations' before going on to critique what has been the common-place reaction to this understanding: that of treating place as a social construct. He argues, to my mind successfully, that place is best understood as encompassing both the physical landscape and the pre-existing social institutions and conditions which act upon an individual; place is thus prior to the mental construction of subjectivity.[59]

I argue, with Malpas, that the culturally-produced landscape which has been studied by historical geographers and others is insufficient for a full understanding of the early modern world (or, indeed, our own). The rush to envisage every "thing" as culturally constructed is demonstrated by both Walsham and Whyte's treatment of the physical landscape as essentially passive; it is purely the cultural constructions through which it is represented which matter to them as historians, and the keywords regarding which they map in their work. This focus upon cultural construction has led to the neglect of the idea that there *is* a physical landscape through which we walk (and *was* a comparable landscape in the seventeenth century), which has an effect on what we think and write. This belief need not lead one to the presentation of the

[58] See especially Edward S. Casey, *Getting back into place : toward a renewed understanding of the place-world* (Bloomington, 1993); Edward S. Casey, *The fate of place a philosophical history* (Berkeley, 1997); Jeff Malpas, *Place and experience : a philosophical topography* (Cambridge, 1999); Jeff Malpas, *The place of landscape concepts, contexts, studies* (Cambridge, Mass., 2011).

[59] Malpas, *Place and experience : a philosophical topography*, pp. 30-35, quote from p. 30.

physical landscape as a near-immutable constraint to societal action and historical change,[60] but opens up the possibility that it is a partial constituent of experience.

At the same time, though, we should be aware that our relationship with the physical landscape is bi-directional- countless rivers which were only important as symbolic arteries at the turn of the seventeenth century were, by the mid-eighteenth, transformed into navigable waterways (and potential trade-routes). Likewise on-going enclosure, drainage of marshes, felling of woodland, and other activities all had physical and cultural impacts as well.[61] The physical landscape then, is not unchanging and cannot be considered static or entirely outside its human context, but nor is it devoid of properties at a particular place and time which affect the semantic interpretations available to any individual investigating it. This treatment of the landscape as a complex signifier painted onto a physical world also carries with it a historical authenticity for this project,

[60] The obvious example is Fernand Braudel, *The Mediterranean and the mediterranean world in the age of Philip II* (New York, 1972). But a similar style of analysis is now seen commonly in popular culture, for instance the BBC's "Great British Countryside" - 'Britain has the biggest variety of geology on earth, *which has created* not only a beautiful landscape, but also a fascinating industrial heritage, a rich history and many legends' (my italics)– BBC, 'South Downs', *Great British Countryside* 2012. <http://www.bbc.co.uk/iplayer/episode/b01cx7hf/The_Great_British_Countryside_South_Downs/> (3rd July).

[61] See especially John Chapman and Sylvia Seeliger, *Enclosure, environment & landscape in southern England* (Gloucestershire, 2001); Rachel Crawford, *Poetry, enclosure, and the vernacular landscape, 1700-1830* (Cambridge, 2002); R. W. Hoyle, *Custom, improvement and the landscape in early modern Britain* (Farnham, 2011).

fitting well with late seventeenth century conceptions of the landscape as exposed particularly clearly in chorographic writing.[62]

The conception of *place* I will employ is therefore an attempt to give the qualities of specificity and, importantly, physicality, to each location and object which is embedded with cultural meaning by the county natural historians. Remembering and recognising explicitly that the seventeenth-century individuals were exploring a physical landscape as well as constructing a cultural one gives a clear indication to both myself and the reader that the interpretation of place varied from location to location, as well as from individual to individual. By common-sense reasoning: your reaction to the sight of a mature oak tree would be different if it was embedded in an otherwise pristine hedgerow, as opposed to standing at the gates of a former railway station house. Likewise, the fact that Station House is my home gives the tree a far different semantic importance to me than the reader.[63] The research question to which this thesis speaks, then, in place of that regarding 'kinds of landscape' quoted above, is closer to "how did

[62] A short list: Keith Thomas, *The perception of the past in early modern England : the Creighton Trust lecture 1983, delivered before the University of London on Monday 21 November 1983* (London, 1983), pp. 5-6; Adam Fox, *Oral and literate culture in England, 1500-1700* (Oxford, 2000), esp. chap. 4; Woolf, *The social circulation of the past*, esp. chap. 9.

[63] Far more eloquent examples of the relationship between landscape and memory, both historical and contemporary, are to be found throughout Simon Schama, *Landscape and memory* (New York, 1995). Also see: D. R. Woolf, 'Memory and Historical Culture in Early Modern England', *Journal of the Canadian Historical Association* new series no. 2 (1991); Rhonda Lemke Sanford, *Maps and memory in early modern England : a sense of place* (New York, 2002); Philip Schwyzer, *Literature, nationalism, and memory in early modern England and Wales* (Cambridge, 2004); Whyte, *Inhabiting the landscape*.

each of the county natural historians think about and construct narrations of the particular places they investigated and the particular objects they came across?"

Disenchantment and Utility

The understanding that we currently have of how early modern gentlemen understood and constructed the landscape around them, as well as being influenced by cultural geography and the use of literary scholarship, has heavily been influenced by the history of science.[64] This is despite the fact that in earlier history of science knowledge of the landscape was largely excluded. The idea of progress in science, which was conceived of as continual, first gained credence in the seventeenth century, and remained largely unquestioned by historians until the mid-twentieth century.[65] From the late 1950s historians gave the label "the scientific revolution" to what was perceived as a particularly active moment in our changing understanding of the natural world, roughly running from Galileo to Newton and focusing by and large upon the application of individual genius.[66]

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[64] Paul Elliott, *Enlightenment, modernity and science geographies of scientific culture and improvement in Georgian England* (London, 2010); Margarita Bowen, *Empiricism and Geographical Thought: From Francis Bacon to Alexander von Humboldt* (Cambridge, 1981); Charlotte Klonk, *Science and the perception of nature : British landscape art in the late eighteenth and early nineteenth centuries* (New Haven, 1996).

[65] Joseph Priestly, *History of Electricity* (1767), p. v: 'the idea of a continual rise and improvement is conspicuous in the whole study' of science, cited in Jan Golinski, *Making natural knowledge: constructivism and the history of science* (Chicago, 2005; reprint, with a new preface, orig. 1998), p. 3. Also see David C. Lindberg, 'Conceptions of the scientific revolution from Bacon to Butterfield : A preliminary sketch', in David C. Lindberg and Robert S. Westman (eds), *Reappraisals of the scientific revolution* (Cambridge, 1990); Herbert Butterfield, *The origins of modern science, 1300-1800* (London, 1957).

[66] For example in A. Rupert Hall, *The scientific revolution, 1500-1800 : the formation of the modern scientific attitude* (London, 1954); C. P. Snow, *The two cultures and the scientific revolution* (New York, 1959); Laura Fermi and Gilberto Bernardini, *Galileo and*

Under this historiography, science was considered to only include what we would now turn the classical or hard sciences: mathematics, physics, astronomy and to an extent, chemistry. Thus, natural history and other mechanisms of cataloguing and representing the landscape, particularly the local landscape, were ignored by early historians of science.

In the 1970s, the growing influence of the social sciences upon historians led to a widening of the lens through which the scientific revolution was viewed. In particular, I would point to Thomas Kuhn's utilization of paradigms as a method of unifying the study of nature at a particular place and time: the paradigm in Kuhn's formulation determines the questions which were asked by scientists and also the methods they use in attempting to answer them. Secondly, I would point to the work of sociologists of scientific knowledge, who argue that scientific "truth" is created by social processes rather than the discovery of "what really is". [67] Modern science, therefore, rather than being the culmination of a linear development, was represented as but one way of understanding the world around us. As a consequence, rather than addressing a continual lineal improvement in our understanding of the natural world historians turn to the investigation of how people in the past conceived of their own investigation of the natural world. One of the ramifications of this was a long and fruitless debate regarding the use of the phrase "scientific revolution"

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the scientific revolution (New York, 1961); Hugh Francis Kearney, *Origins of the scientific revolution* (London, 1973).

[67] Thomas Khun, *The Structure of Scientific Revolutions* (London, 1962); David Bloor, *Wittgenstein : a social theory of knowledge* (New York, 1983); Bruno Latour and Steve Woolgar, *Laboratory life : the social construction of scientific facts* (Beverly Hills, 1979).

which has run from the 1980s to today- I will be utilizing the term throughout to indicate both the historiographic understanding of intellectual change in the period, and intellectual change itself, which were profound (whatever the merits of terming them revolutionary).[68] A further ramification of attempts to treat seventeenth century natural knowledge on its own terms was a huge widening of the forms of study which historians of science looked at: for instance, historians began to touch upon seventeenth-century natural history which was understood as an empirical project of collection of natural phenomena intended to serve natural philosophy under the banner of science.

Focus turned, for those historians inspired by cultural anthropology, to several aspects of the socio-cultural context in which 'science' was produced, with a particular focus on the importance of identity.[69] In place of either individual genius, as posited by earlier historians, or socially-imposed identity, as posited by those more heavily influenced by sociologists, cultural historians of

[68] For the currently received understanding see: Peter Dear, *Revolutionizing the sciences : European knowledge and its ambitions, 1500-1700* (Basingstoke, 2009). Historiographic summaries include: A. Rupert Hall, 'Retrospection on the Scientific Revolution', in Judith Veronica Field and Frank A. J. L. James (eds), *Renaissance and revolution : humanists, scholars, craftsmen, and natural philosophers in early modern Europe* (Cambridge, 1993); Steven Shapin, *The scientific revolution* (Chicago, 1996); Lindberg, 'Conceptions of the scientific revolution from Bacon to Butterfield : A preliminary sketch'; P. Galison, 'Ten Problems in History and Philosophy of Science', *ISIS* 99 no. 1 (2008).

[69] Peter Dear, 'Totius in verba : rhetoric and authority in the early Royal Society', *ISIS* 76 no. 2 (1985); Marie Boas Hall, 'The Royal Society's Role in the Diffusion of Information in the Seventeenth Century', *Notes and Records of the Royal Society of London* 29 no. 2 (1975); Michael Hunter, 'The Social Basis and Changing Fortunes of an Early Scientific Institution: An Analysis of the Membership of the Royal Society, 1660-1685', *Notes and Records of the Royal Society of London* 31 no. 1 (1976); S. Schaffer, 'Natural philosophy and public spectacle in the eighteenth century', *History of Science* 21 no. 1 (1983); B. J. Shapiro, 'The Universities and Science in Seventeenth Century England', *The Journal of British Studies* 10 no. 2 (1971).

science from the 1980s utilized a malleable form of identity neither entirely individual nor entirely determined by external factors.[70] This encouraged a more nuanced and localized historiography to develop about the networks and institutions in which science took place and the role of rhetoric and art, while at the same time formerly neglected groups such as artisans and women began to be included.[71]

Concurrently, and heavily influenced by social anthropology, a more ambitious school of social, intellectual history began to refine the scientific revolution narrative as a whole; it was with this school of history and Keith Thomas in particular that the interaction of seventeenth century gentlemen with the landscape around them came firmly within the purview of history. Thomas in his seminal *Man and the Natural World* (1983) demonstrates what Kuhn would have referred to as a paradigm shift in early modern English men's perception of and feelings regarding the landscape through the period from 1500 to 1800. The central thrust of the argument is that in the sixteenth century the world and the landscape were understood as being created by an all-powerful and irrational God, and were therefore best portrayed through analogy with Man, God's

[70] Mario Biagioli, 'Galileo's System of Patronage', *History of Science* 28 no. 1 (1990); Greenblatt, *Renaissance self-fashioning : from More to Shakespeare*; Steven Shapin, '"A scholar and a gentleman" : the problematic identity of the scientific practitioner in early modern England', *History of Science* 29 (1991).

[71] Mario Biagioli, *Galileo, courtier : the practice of science in the culture of absolutism* (Chicago, 1993); Anne Goldgar, *Impolite learning : conduct and community in the Republic of Letters, 1680-1750* (New Haven, 1995); David S. Lux and Harold J. Cook, 'Closed circles or open networks?: Communicating at a distance during the scientific revolution', *History of Science* 36 no. 112 (1998); Londa Schiebinger, *Nature's body : sexual politics and the making of modern science* (London, 1994); P. H. Smith, 'Artists as scientists: nature and realism in early modern Europe', *Endeavour* 24 no. 1 (2000).

greatest creation. By the eighteenth century this perception of a landscape enchanted and impossible to understand by fixed laws had been eroded; and Thomas argues that this revolution in the perception of the landscape stretched from intellectual conceptions to those of the common man.

> the fate of our times is characterized by rationalisation and intellectualisation and, above all, by the 'disenchantment of the world.'[72]
>
> a fundamental departure from the assumptions of the past… Scientists had rejected the belief that natural phenomena were to be understood in terms of their human meaning.[73]

Around 1660, mainstream historiography of science agrees, there was a shift in our interaction with the natural world which saw metaphor and signs displaced by a more direct relationship between the words we used and the objects being described.[74] William Ashworth has argued that for both natural historical and antiquarian thought, Thomas Browne (1605-1682) is exemplary of this shift. Browne, an antiquary and natural historian, is presented as testing through experiment and empirical observation the preconceptions relating to nature which had previously been the focus of attention themselves- for example whether 'toads and spiders have an innate antipathy… [or] a dead kingfisher, hung by the bill, will point in the direction of the wind'. Browne,

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[72] M. Weber, *From Max Weber: essays in sociology*. Edited by H.H. Gerth, C.W. Mills, and B.S. Turner (Abingdon, 1991), p. 155.

[73] Keith Thomas, *Man and the natural world : a history of the modern sensibility* (New York, 1983), p. 90.

[74] For example: Bruce T. Moran, *Distilling knowledge : alchemy, chemistry, and the scientific revolution* (Cambridge, Mass., 2005), pp. 157-162; Shapin, *The scientific revolution*, pp. 107-117.

Ashworth argues, is representative of the shift outlined above: before him, natural historians would have collated and catalogued these perceived truths in great detail; afterwards they were questioned and tested. Ashworth traces this quest for truth to a combination of new scientific attitudes and the 'historical revolution' which came about with the rise of antiquarianism.[75] For Ashworth, antiquarianism is central to the re-evaluation of modes of testimony, empiricism and systematisation which constitute our understanding of the scientific revolution, and on this point we are in agreement.

This viewpoint of a disenchantment of the world has had wide support in historiography since the 1980s, in particular drawing upon Michel Foucault's conception of a Renaissance world-view, or "episteme". Foucault argued that Renaissance intellectuals took the metaphoric correspondences between microcosm and macrocosm literally;[76] and for the narrow sample of thinkers he surveyed this was convincingly demonstrated. However, the generalizations from the thinkers Foucault surveyed into a picture of an 'enchanted' Renaissance episteme is hugely problematic. Indeed, *Man and the Natural World*, which discusses very similar issues and posits a similar general argument, demonstrates

[75] William B. Jr. Ashworth, 'Natural History and the Emblematic World View', in David S. Lindberg and Robert S. Westman (eds), *Reappraisals of the Scientific Revolution* (Cambridge, 1990), pp. 319-324. For the historical revolution in this context see: Denys Hay, *Annalists and historians : Western historiography from the eighth to the eighteenth centuries* (London, 1977), chapter 8, 'Historians and Antiquaries in the Eighteenth Century: The Emergence of the Modern Method', pp. 169-185; F. Smith Fussner, *The historical revolution: English historical writing and thought, 1580-1640* (New York, 1962); Arthur B. Ferguson, *Clio unbound : perception of the social and cultural past in Renaissance England* (Durham, N.C., 1979).

[76] For earlier work giving a broadly similar argument see Arthur O. Lovejoy, *The great chain of being; a study of the history of an idea* (Cambridge, Mass., 1936); E. M. W. Tillyard, *The Elizabethan world picture* (London, 1943).

Thomas' own reservations regarding its wholesale application: 'there was, of course, nothing new about the realization that the natural world had a life of its own.'[77] More recently, Brian Ogilvie in *The Science of Describing* has, to my mind convincingly, shown that for the majority of Renaissance naturalists there were clear distinctions between 'the empirical study of nature and the symbolic interpretation of it.'[78]

At the same time, what might be termed 'enchantment' in some areas of thought regarding the landscape has been identified as continuing through the period and well into the eighteenth century. This has been demonstrated particularly clearly in *Miracles in Enlightenment England* (2006), in which Jane Shaw discusses the continuance of reports of miracles through the eighteenth century; although in a pluralistic culture with 'a range of ideas and opinions on the miraculous and the wondrous, the ordinary and the extraordinary'.[79] That is to say that the picture of the disenchantment of the world being used by Ashworth, Broadway and Vine is itself highly problematic. While there *was* a significant change in the meanings encoded in the study of the natural world; this was *not* a removal of meaning, and should not be characterised as disenchantment. Importantly, the newer historiography on this topic suggests that these developments were incremental and evolutionary,[80] and took place at

[77] Thomas, *Man and the natural world*, p. 51.

[78] Brian W. Ogilvie, *The science of describing : natural history in Renaissance Europe* (Chicago, 2006), p. 16.

[79] Jane Shaw, *Miracles in Enlightenment England* (New Haven, 2006), p. 177.

[80] Robert W. Scribner, 'The Reformation, Popular Magic, and the "Disenchantment of the World"', *Journal of Interdisciplinary History* 23 no. 3 (1993); Robert W. Scribner,

vastly different times in different places and as regards different forms of knowledge, eschewing the 'epistemic shift' suggested above.

This more nuanced viewpoint has come alongside a strong focus upon the meanings and effects of different styles and methods of investigating nature, particularly those which are either classed or professed to be empirical. The long run narrative of disciplinary change through the period is one of what we would now refer to as specialisation. What was natural history and natural philosophy, the generalised study of nature through texts and logical argumentation, became a whole series of 'ologies' which focused on the investigation of specific parts of nature-[81] plants (biology), animals (zoology), rocks (geology), etc.. The central thesis put forward, and though increasingly nuanced almost universally accepted, is that the shift from centring our knowledge on ancient texts to centring it on nature itself resulted in a more 'useful' in the sense of profitable engagement with the natural world. The traditional place of natural history, as I said above, has been as an accessory to science, a predicate for the development of progress but not progress in itself. The place of empiricism in this account of intellectual change is central. There was, so the narrative of the Scientific

'Reformation and Desacralisation: from Sacramental World to Moralised Universe', in R. Po-chia Hsia and Robert W. Scribner (eds), *Problems in the historical anthropology of early modern Europe* (Wiesbaden, 1997).

[81] Peter Harrison, Ronald L. Numbers, and Michael H. Shank (eds.), *Wrestling with nature : from omens to science* (Chicago, 2011), pp. 1-6.

Revolution goes, an increasing reliance upon nature as the arbiter of truth,[82] often based around a Baconian narrative.[83]

Methods formerly considered to have existed only in a narrow range of 'scientific' disciplines have since been located in a far wider range of subjects by historians of science. Indeed, from humanist textual study to magic, a wide range of fields formerly derided as sterile or esoteric have been incorporated within our narrative of the scientific revolution.[84] Gone are the days when mechanical philosophy and specialised empirical observation alone were the cornerstones of our understanding of seventeenth-century science, of modernity. Now, perhaps the only unifying theme in writings on English seventeenth-century science is the presence of Francis Bacon (1561-1626). Both textual study and magic were incorporated partly on the justification that Bacon saw a use for them: critical textual study was necessary in an age where the text-books themselves were editions of thousand-year old works, and magic was able to manifestly alter

[82] Lorraine Daston, 'Fear and Loathing of the Imagination in Science', *Daedalus* 127 no. 1 (1998); Lorraine Daston, 'Attention and the Values of Nature in the Enlightenment', in Lorraine Daston and Fernando Vidal (eds), *The Moral Authority of Nature* (London, 2004); Lorraine Daston and Katharine Park, *Wonders and the order of nature, 1150-1750* (New York, 1998). Also Harold J. Cook, 'The Cutting Edge of a Revolution? Medicine and Natural History near the shores of the North Sea', in Judith Veronica Field and Frank A. J. L. James (eds), *Renaissance and revolution : humanists, scholars, craftsmen, and natural philosophers in early modern Europe* (Cambridge, 1993); Harold J. Cook, 'Physicians and natural history', in Nicholas Jardine, Emma Spary, and J. A. Secord (eds), *Cultures of Natural History* (Cambridge, 1996).

[83] See for example: John Henry, *Knowledge is power : Francis Bacon and the method of science* (Cambridge, 2002).

[84] Allen G. Debus and Michael Thomson Walton (eds.), *Reading the book of nature : the other side of the Scientific Revolution* (Kirksville, Mo., 2001); Moran, *Distilling knowledge*.

nature.[85] It was this utility which, for Bacon, was the measure of natural knowledge: 'there is none more certain or worthy than that of the fruits produced: for the fruits and effects are the sureties and vouchers, as it were, for the truth of philosophy.'[86] This approach has become central to our understanding of natural knowledge in the period. As Peter Dear, whose *Revolutionizing the Sciences* is an authoritative introduction to our current understanding of natural knowledge in the period, puts it: 'knowledge of nature increasingly implied knowledge of how natural things *worked* and how they could be *used*.'[87]

I argue that the core of what continues to unify the history of science covering the period 1660-1720 is the idea of a slow and multifaceted transition towards treating nature in a rational, utilitarian way- with Weber's purposive rationality- as Thomas described for the English case. Hence the most important changes in our relationship with nature, from the perspective of historians of science, are those which remain tied into the narrative discussed above: from the metaphorical to the exploitative. The centrally unifying strand to our current understanding of the scientific revolution, then, is the rise of utility: hence our interest in 'useful knowledge', 'improvement', and other terms which we take to be strongly overlapping with our modern concept of utility. Indeed the conception of useful knowledge as a universal aim for "modern man" has

[85] Henry, *Knowledge is power*; John Henry, *The scientific revolution and the origins of modern science* (Basingstoke, 2002).

[86] Bacon, *Novum Organum* in Douglas Denon Heath, James Spedding, and Robert Leslie Ellis (eds.), *The works of Francis Bacon*, 14 vols. (London, 1857-1874), vol. 3, p. 354.

[87] Dear, *Revolutionizing the sciences*, p. 9.

permeated a far wider sphere of historiography- particularly that related to consumption, commerce, and politics.[88]

Mary Poovey, in *A History of The Modern Fact*, argues that the unit of knowledge which emerged from Baconian-inspired attempts to understand the world in terms of natural philosophy, the "modern fact", is itself distinguished by its utility. 'Facts' for Poovey are only 'modern' if they are '*both o*bserved particulars *and* evidence of some theory'.[89] In other words, to become a fact, in the modern world, an observation must be used for something. However, whether or not the "modern fact" can be taken to be the unit of knowledge in the eighteenth and nineteenth centuries, Poovey herself has suggested that there were still several types of *fact* available in the late-seventeenth. Yet historians of science or intellectual culture have focused upon utility, a "modern fact" associated concept, as the unifying factor of the scientific revolution: this teleology works well for the new longue durée narratives seen in Daston's edited collections,[90] but is insufficient for explaining short-term change, as is the subject of this thesis. That is to say that, because we have taken for granted the 'modern fact' which Poovey describes as the objective of natural knowledge, it has become the delimiter when we consider what *counts* as natural knowledge in the

[88] E.g. Joel Mokyr, *The enlightened economy : an economic history of Britain, 1700-1850* (New Haven, 2009), pp. 1-12, 34-35, 40-62; Margaret C. Jacob and Larry Stewart, *Practical matter : Newton's science in the service of industry and empire, 1687-1851* (Cambridge, Mass., 2004), pp. 41-48.

[89] Mary Poovey, *A History Of The Modern Fact: Problems of Knowledge in the Sciences of Wealth and Society* (Chicago, 1998), p. 9.

[90] Lorraine Daston and Peter Galison, *Objectivity* (New York, 2007); Daston and Park, *Wonders and the order of nature*; Lorraine Daston and Fernando Vidal, *The moral authority of nature* (Chicago, 2004).

early modern period. As a result of this, historians of science have largely confined themselves to studying "useful" disciplines, while historians of local history have largely restrained themselves from studying the same disciplines.

However, seventeenth-century gentlemen, and particularly the group under study in this thesis, saw no such useful/non-useful division, despite the occasional satire suggesting otherwise. For the period 1660-1720, that is to say, individuals could span both "sides" of the divide posited by historians of science- this was the transitory period. For instance, John Aubrey's conception of natural knowledge covered a vast range of topics, from the location and properties of medicinal springs to 'the grandeur of the Herberts, Earls of Pembroke'; from the types of minerals available in the county to a historical account regarding 'hawking'; from listing the varieties of birds he was familiar with to listing the antiquities he had encountered.[91] His conception of nature, in short, covered much of what we would regard as artificial- in fact, it is difficult to think of any potential topic of local observation which he did not consider within his purview, with the exception of narratives others had told regarding the landscape (folklore, etc.). Robert Plot, whose similar investigations regarding Oxfordshire culminated in the printing of *The Natural History of Oxfordshire* in 1676, was similarly taken in by a 'subject… of so great variety'[92]. John Morton, a generation later, explained explicitly the reason that art and human endeavour should be

[91] F.J. Varley, *The siege of Oxford: an account of Oxford during the civil war, 1642-1646* (Oxford, 1932).

[92] Robert Plot, *The natural history of Oxford-shire being an essay toward the natural history of England* (Oxford, 1677), 'preface to the reader'.

included within a natural history, 'Art ... being nothing else but Nature restrained, forced, or fashioned, in her Matter or Motions.'[93]

"Mouldy" Antiquarians, Historical Sensibility and Nature

One area which has been excluded from study by the vast majority of historians of science is antiquarianism-[94] long derided as useless. As Nietzsche describes: 'The man envelops himself in a mouldy smell… and takes pleasure in gobbling up even the dust of biographical rubbish… Antiquarian history knows only how to preserve life, not how to generate it.'[95] Indeed. Preservation, rather than generation, was the aim of antiquarianism and of county natural history in the late seventeenth-century; rather than a focus on the generation of change (progress, or whatever) the focus was on the *meaning* of what was already there, and preserving it for future contemplation.

For the seventeenth-century antiquarian, we could explain the mouldy smell, to extend the satirical analogy, by the fact that they 'love[d] all things (as

[93] John Morton, *The Natural History of Northampton-shire, with Some Accounts of the Antiquities* (London, 1712), p. 476.

[94] Exceptions include Hunter, *John Aubrey*; Ashworth, 'Natural History and the Emblematic World View'; Stan A. E. Mendyk, *'Speculum Britanniae': Regional Study, Antiquarianism, and Science in Britain to 1700* (London, 1989). And soon-to-come: Vittoria Feola, *Elias Ashmole and the Uses of Antiquity* (Paris, forthcoming 2013); Vittoria Feola (ed.), *Antiquariansim and science in urban networks, ca 1580-1700* (Paris, forthcoming 2012).

[95] Friedrich Nietzsche, 'On the Use and Abuse of History for Life, Translated by Ian Johnston', *Johnstonia*, 2010. (1st March). We can only speculate as to whether Nietzsche read Aubrey: 'It is said of antiquaries, they wipe off the mouldiness they dig, and remove the rubbish.' John Aubrey, *Wiltshire: the topographical collections of John Aubrey*. Edited by J. E. Jackson (London, 1862), 'preface'.

Dutchmen doe Cheese) the better for being mouldy and worme-eaten'[96], being acquisitive to the point of being a 'glutton-feeder of the appetite'[97]. However, as Angus Vine has shown in his 2010 book *In Defiance of Time*, early modern satire of antiquarians should not be over-emphasised; indeed, satire of scientific virtuosi was every bit as aggressive.[98] The seventeenth-century antiquarian was far more respected than his twenty-first century counterpart, as Vine demonstrates for the period up to 1660.

These county natural histories were part of a wider project of county history (both antiquarian and chorographic) which began in the sixteenth century and persists to this day. Inspiration and source material was particularly taken from William Lambarde's (1536-1601) *A Perambulation of Kent* (1576), and Carew's (1555-1620) *Survey of Cornwall* (1602), and the wider concept of county identity has been examined by historians, with a particular focus upon gentry culture and antiquarian pursuits.[99] Works such as this defined the geographical scope of English natural history in the seventeenth century- the county. This unit of study has continued, with the Victoria County Histories being particularly emblematic of the format; though the scope of county study has constantly

[96] John Earle and Edward Blount, *Micro-cosmographie. Or, A peece of the world discouered in essayes and characters* (London, 1628), pp. 1-2.

[97] Thomas Palmer and Theodor Zwinger, *An essay of the meanes hovv to make our trauailes, into forraine countries, the more profitable and honourable* (London, 1606), pp. 43-44.

[98] Al Coppola, 'Retraining the Virtuoso's Gaze: Behn's Emperor of the Moon, The Royal Society, and the Spectacles of Science and Politics', *Eighteenth-Century Studies* 41 no. 4 (2008).

[99] Jan Broadway, *William Dugdale and the significance of county history in early Stuart England* (Stratford-upon-Avon, 1999); Broadway, *'No historie so meete'*.

changed through time. Earlier works focused upon topography or gentry studies, with the natural world playing a secondary role, or covered in separate works which generally did not use the county as a unit for study, their focus being upon philosophical theory or anecdotes which prove a theory.[100] Later works, and particularly those which are ongoing today, have become more focused and specialised; as even a cursory google search for "local natural history" will show, there are ornithologists in Stafford, geologists in Sedgwick.

In the mid-to-late seventeenth century, local study also acted for specific socio-cultural reasons which will be discussed at length in Chapter One, and which dissipated as the eighteenth century progressed. The most notable of which was the glorification of local patrons, hence the dedication, for instance, of two chapters of Aubrey's *of Wiltshire* to his main patron: 'The grandure of the Herberts, Earls of Pembroke, Wilton House and Garden' and 'Learned Men who received Pensions from the Earles of Pembroke': 'Tis certain that the Earles of Pembroke were the most popular peers in the West of England; but one might boldly say, in the whole kingdom'. The description of their locale was important due to its naturalisation of landed identity, and in particular its location of the landed gentry in time and in place; they saw their authority as deriving both from

[100] See for example Ralph Austen and Francis Bacon, *Observations upon some part of Sr Francis Bacon's Naturall history as it concernes fruit-trees, fruits, and flowers especially the fifth, sixth, and seaventh centuries, improving the experiments mentioned, to the best advantage* (Oxford, 1658).

historical support and the landscape itself, as is explored by Marjorie Swann in *Curiosities and Texts*.[101]

The genre amply demonstrates that historical sensibilities were applied to far more than subjects within formal historiography. Daniel Woolf uses the term "historical culture" to refer to the wide range of interest in the past in early modern England. He especially points, in *The Social Circulation of the Past*, to those subjects which fall outside 'formal historiography', including both other published genres and the extensive reference to the past in private diaries and correspondence.[102] Woolf defines a historical culture as consisting of:

> habits of thought, languages, and media of communication, and patterns of social convention… expressed both in texts and in commonplace forms of behavior… [T]he notions of the past developed within any historical culture are… part of the mental and verbal specie of the society that uses them. [103]

I prefer the term 'historical sensibility' to 'historical culture' because of the linkage of the latter term, used by Woolf, to the tendency in his work, at least in its theoretical discussions, to attempt to identify (my addition) 'a [singular] discernible historical culture within which various aspects of the past were identified and circulated by contemporaries'.[104] As discussed above, my vision of late seventeenth century England is more pluralistic, encompassing

[101] Marjorie Swann, *Curiosities and Texts: The Culture of Collecting in Early Modern England* (Philadelphia, 2001), esp. pp. 78-99.

[102] His meaning of historical culture is spelt out at more length in D. R. Woolf, 'A High road to the archives? Rewriting the History of Early Modern English Historical Culture', *Storia della storiografia* 32 (1997).

[103] Woolf, *The social circulation of the past*, pp. 9-10.

[104] Ibid., p. 9.

multiple approaches to the past of which the county natural historians shared only one. Thus, I utilize the term "historical sensibility" as a group-based, or potentially even individual, analytic tool which enables a more fine-grained analysis of attitudes to the past.

Alex Walsham, in her recent *Reformation of the Landscape*, suggests that 'early modern people from all rungs on the social ladder had the capacity to inhabit several mental worlds simultaneously', an ostensibly novel and short-lasting ability which Michael Hunter termed the 'rise of schizophrenia'.[105] As Hunter's light-hearted pathologisation implies, though, this is situated strictly as something of the past, as a historical feature. One consequence of thinking about "sensibilities" rather than "culture(s)" is that the multiple becomes analytically easier to account for. To give a modern example, a trained geologist who is also an amateur poet can have two simultaneous and non-contradictory (though also impossible to unify) sensory responses to a sedimentary rock formation: (s)he sees both a series of layers laid down over millions of years and a wondrous, beautiful feature. This thesis partially rests upon the reader accepting that county natural historians *could* think in entirely different ways in different contexts, and that they did *not* feel the need to integrate these different modes of thought.

However, for the county natural historians at least, there were some influences which spanned their modes of thought: for instance, the moral fear

[105] Walsham, *The reformation of the landscape*, pp. 374-375; Michael Hunter, *Robert Boyle : (1627 - 91) ; scrupulosity and science* (Woodbridge, 2000), p. 244.

that without making an attempt to preserve knowledge it would be lost forever. Recent work by Peter Harrison has traced empirical methodology to an attempt to work with the cognitive damage wrought by original sin, firmly linking religion and science. The pursuit of natural knowledge, in his reading, was not to recover the knowledge of the ancients, nor to move beyond their knowledge of the natural world, but was an attempt to recover the knowledge of God, of Adam, by reading the book of nature.[106] In this regard, recovery, as well as preservation, was at the heart of the county natural historical endeavour, and the religious undertones of this should not be underplayed. As John Aubrey remarked, before the execution of Charles I in 1649 it had been '…not fit to be wiser than their fathers and not good manners to be wiser than their neighbors; and a sin to search into the ways of nature.'[107]

Aubrey and his contemporaries believed in the generation after 1649 that progress in knowledge beyond that of the previous generation, and by implication the ancient world, was possible.[108] More importantly, curiosity regarding nature was no longer a 'sin', in Aubrey's terminology. The wider instantiations of this change have been the subject of a notable amount of work regarding conceptions of curiosity over the past two decades. Curiosity regarding

[106] Peter Harrison, *The fall of man and the foundations of science* (Cambridge, 2007).

[107] Aubrey, *The Natural History of Wiltshire*, 'preface', p. 5.

[108] The idea of progress itself has a long historiography- see for example: Ernst Cassirer, *The philosophy of the enlightenment* (Princeton, 1951); Isser Woloch, *Eighteenth-century Europe, tradition and progress, 1715-1789* (New York, 1982); Louis K. Dupré, *The Enlightenment and the intellectual foundations of modern culture* (New Haven, 2004); Jonathan I. Israel, *A revolution of the mind : Radical Enlightenment and the intellectual origins of modern democracy* (Princeton, N.J., 2010), pp. 1-36.

the wondrous, the exotic and the unusual has been particularly well explained, indeed in Daston and Park's seminal study, *Wonders and the Order of Nature*, as well as in Benedict's *Curiosity: A Cultural History of Early Modern Inquiry*, the distinction between curiosity and wonder is largely elided. Curiosity in these works represents the appetite for finding an 'unknown' which will evoke the response of wonder.[109] This conception of curiosity can be applied, as the aforementioned authors do, to those Early Modern intellectuals who were looking outwards. Indeed it can also explain the interest of the county natural historians in such 'curiosities' as fossil fragments, double sunsets, and other rare events (despite their domesticity).

However, we also need to account for the curiosity of county natural historians regarding the "run of the mill", for instance John Aubrey's inquisitiveness regarding the tradesmen he was 'continually with' as a child growing up in the manor house in Easton Pierse, and regarding the soil types along his regular journey through his teenage years from Oxford to Wiltshire. The everyday, as well as the wondrous, were objects of the particular sense of curiosity shared by the county natural historians. One of the reasons that the everyday attracted such attention, for these men, was their use of loosely 'historical' narratives around the objects and events encountered. There was an

[109] Barbara M. Benedict, *Curiosity : a cultural history of early modern inquiry* (Chicago, 2000). See also Daston and Park, *Wonders and the order of nature*; Robert John Weston Evans and Alexander Marr (eds.), *Curiosity and wonder from the Renaissance to the Enlightenment* (Aldershot, 2006); Kay Dian Kriz, 'Curiosities, Commodities, and Transplanted Bodies in Hans Sloane's "Natural History of Jamaica"', *The William and Mary Quarterly* 57 no. 1 (2000); Katie Whitaker, 'The culture of curiosity', in Nicholas Jardine, Emma Spary, and J. A. Secord (eds), *Cultures of Natural History* (Cambridge, 1996).

interest both in practices passed down from previous generations; and in remnants of past times, both artificial and natural; hence the stones of Avebury (the lesser-known cousin of Stonehenge) were of immense interest as obviously ancient remnants. However even singular contemporary events were given a narrative, chronological context, as we will see: for instance a sighting of a "mock sun", a relatively common event in unpolluted skies in which a second or third Sun appears "behind" the Sun itself, is located in time by Robert Plot equally as firmly as it was in place.

This discussion regarding curiosity is illustrative of the wider point which the thesis makes: that the county natural historians were antiquarian naturalists. By this I mean that they shared both the interests and the methodologies of their antiquarian peers, every bit as much as they did their naturalist fellows within the Royal Society. Their predominant concern was certainly not with demarcating disciplinary boundaries, as would become perhaps *the* predominant concern of naturalism through the eighteenth century. Instead, it was with *place*, with locality, and with description of the specific. There are significant parallels here with this thesis, which chooses to focus upon one discipline not as emblematic of a wider culture (though I do make conjectures in that direction from time to time), nor as part of an attempt to mould a new sub-sub-discipline within history, but as an attempt to apply a wide range of analytic tools to a particular case study. Thus I draw on unfamiliar bedfellows in the history of antiquarianism and the history of science; and argue that they should become more familiar in future, as regards this period of English history at least.

Chapter Structure

The first chapter picks up on two recent examinations of the Tudor and Early Stuart antiquary which have situated antiquarianism in this period as part of gentry culture, by Jan Broadway and Angus Vine. I take their work forward through the Restoration, asking to what extent the late seventeenth and early eighteenth-century local historian, endowed with strong natural historical interests, new scientific practices and a more empirical than imaginative mind-set, was occupying an analogous socio-cultural space to his predecessors. The chapter demonstrates that county natural historians represent an evolutionary, not revolutionary, step from the antiquarians who preceded them, interacting with a memorial and gentry culture which would be clearly recognisable from the Tudor and early Stuart Age. At the same time, following the generational gap for local study provided by the Civil War and Interregnum, the increasing importance of the 'new science' surrounding the Royal Society encouraged the integration between natural history and antiquarianism which is at the heart of the thesis.

Chapter two, focusing particularly upon a journey into Kent made in August 1693 by Robert Plot and Thomas Browne (1646/7-??),[110] explores the methodologies employed by county natural historians in an attempt to preserve the natural and man-made landscape around them. It discusses the extensive preparation that went on before trips such as this one, involving library research

[110] The son of Sir Thomas Browne (1605-82). I infer his year of birth from T. Browne and S. Wilkin, *Sir Thomas Browne's works, including his life and correspondence* (London, 1968).:p. lxxv: 'he sent his second son, Thomas, to France in 1660, at the age of fourteen.'

and correspondence, along with in many cases sending questionnaires to locals and recalling personal experiences of the area, all of which was used to plan a route along which to travel, and to help determine when to go "off-route" to explore. While travelling they conversed with locals, observed the world around them, collected objects, commissioned illustrations, undertook basic experiments and transcribed a wide variety of lay and ecclesiastical records. In order to demonstrate these to the reader the main method used was the personal narrative, giving enough detail that the reader could experience, at a distance, the phenomena discussed and, if they so wished replicate it themselves. These narratives were backed up with references to collected objects, illustrations commissioned from engravers, and in the case of published works further textual research was undertaken, all of which were, the chapter will demonstrate, used to add authenticity to the accounts. The chapter closes by discussing the various practices by which these permanent records were disseminated through the collection of objects in the Ashmolean, the printing of the texts on which this thesis focuses, and the use of manuscript circulation for instance through the Royal Society and Bodleian.

Chapter three turns to historical epistemology to investigate the works produced by the county natural historians. It seeks to look at the basic epistemic concepts which underpinned the production of knowledge in the latter seventeenth century, with the aim of demonstrating that the County natural historians utilized a specific style of empiricism that I shall label faithful representation, or fidelity. It will argue that the aim of the county natural

historians was not to provide examples of well known axioms (the "Aristotelian fact"), nor to provide data for generalisation by natural philosophers (the "modern fact"), nor indeed to produce catalogues of deracinated particulars, but was to provide historical, descriptive and above all *local* knowledge which was culturally meaningful in itself. The chapter closes by situating faithful empiricism in the context of recent work by Daston and Galison, and in particular their conception of 'truth-to-nature' in the eighteenth century.

Chapter four looks at the significant change in the meanings encoded in the study of the natural world, following anthropologically-inspired historiography by arguing that this was not a removal of meaning. Instead, using the embedded religious and medical meanings which particular natural objects held, the chapter argues that the period saw a redefinition of the meanings encoded in the landscape. The county natural historians, whether physico-theologists or not, all believed that through the natural curiosity of humanity the study of the natural world would enable us 'to take a clearer view of the infinite wisdom of the great creator', who provided people with everything they needed in the natural world.[111] When county natural historians did share potentially useful information, as in the case of the health properties of the landscape and in particular natural springs, I will demonstrate that they did so in such a way as to embed the properties within the landscape itself, rather than the people who inhabited it. By associating both God and health with the landscape they were

[111] Morton, *of Northampton-shire*, 'preface'.

observing our authors demonstrate the particular power of natural history to "naturalise" the economic, moral and social ideas of the times.

The conclusion, in addition to drawing together the arguments advanced by the thesis, will briefly explore the way in which both antiquarianism and natural history progressed as disciplines in the eighteenth century. Even for local study, the two were clearly separated as disciplines, as we can see from William Borlase's two works: *The Antiquities of Cornwall* (1754) and *The Natural History of Cornwall* (1758). While Borlase's interests still spanned both antiquities and natural history, and much besides, his understanding of genres had them clearly separated. Antiquarianism retained the thoroughly local focus seen in county natural histories, while natural history (with some exceptions) became predominantly focused upon classifying, naming, and the production of general descriptions.

Chapter One- The landscape of County Natural History: Memory, Patronage, and Sociability

In two of the most recent book-length examinations of Tudor and Early Stuart English antiquarianism, both Jan Broadway and Angus Vine close their studies with the example of Thomas Browne, in particular focusing upon his *Hydriotaphia, or Urne-Buriall* (1658) and 'Concerning some urnes found in Brampton-field in Norfolk, Anno 1667'.[1] These two works, we are told, are exemplary of an intellectual shift in antiquarianism taking place around the time of the Restoration. Browne is situated by both Broadway and Vine 'at the crossroads between the study-bound scholar… and the new experimental natural scientists'.[2] The intellectual changes described are, in short, a more sceptical attitude to textual sources, increased use of observational practices, and an intention to report on specific occurrences rather than to imaginatively recreate the past.[3] As will be discussed in later chapters, this summation of intellectual change has been an orthodox position in intellectual history since the 1980s and, while perhaps over-simplistic, has much to commend it and has led to a plethora of productive research.[4]

[1] Thomas Browne, 'Concerning some Urnes Found in Brampton Feild in Norfolk 1667', in Geoffrey Keynes (ed.), *The Works of Sir Thomas Browne* (London, 1964); Thomas Browne, 'Hydriotaphia, or Urne-Buriall', in Geoffrey Keynes (ed.), *The Works of Sir Thomas Browne* (London, 1964).

[2] Broadway, *'No historie so meete'*, p. 133.

[3] Angus Edmund Vine, *In defiance of time : antiquarian writing in early modern England* (Oxford, 2010), pp. 204-206; Broadway, *'No historie so meete'*, pp. 232-235.

[4] See the introduction to chapter three for the historiographic discussion.

However, the focus of Broadway and Vine was upon the socio-cultural position of antiquaries and other local historians, rather than their intellectual background and thought. This chapter, therefore, discusses the socio-cultural place of the 'new' antiquary, the county natural historian, in the period to 1720. I will ask whether, despite their natural historical interests, new scientific practices and a more empirical than imaginative mind-set, the county natural historians were still occupying the same socio-cultural space as their antiquarian predecessors. Or, can we map a change in their social and cultural roles alongside the intellectual content of their works, as compared to predecessors? In doing so, it seeks to move Broadway and Vine's work forward in time, encompassing the next two generations of local historians. Therefore, a brief summation of both Broadway and Vine's principal arguments is necessary.

Broadway's central interest and achievement in '*No historie so meete'* was to demonstrate the socio-cultural position of local historians through the Tudor and Early Stuart period, and the relationship between this position and the style of the work produced. She shows that many local historians were members of a community centred around the regional gentry, and that those who were not members *per se* felt compelled (or at least encouraged) to share gentrified interests. Hence, while recognising that the county community was not always a unified one, the focus of most local antiquarian work was upon the common heritage and shared factors which brought a community together. Status and family connections, then, take their position alongside piety and civil obedience in being the shared values behind, and didactically put forward through, local

history.[5] Alongside this inherently localised focus, Broadway examines the role of national connectors, or nodes, in the development of antiquarian writing, particularly focusing upon the use of connections forged between gentlemen from different regions through the Inns of Court, the College of Arms and the short-lived (and little-recorded) Society of Antiquaries.[6] I would ask whether we see any significant changes in this picture through to the early eighteenth century: as I will show, family and local concerns remained at the heart of antiquarian study as undertaken through the county natural history, and while the institutions connecting regional antiquaries developed, most notably with the emergence of the Royal Society from 1660, their role as nodal points did not.

Vine, focusing upon the national rather than regional picture, traces the aims and intentions of antiquarians through the sixteenth and early seventeenth centuries within the wider context of memorial culture. Vine argues, in his work *In Defiance of Time*, as the title suggests, that pre-Civil War antiquaries and chorographers shared the humanist aim of restoring and/or resurrecting the past, using the educated imagination to piece together evidence in order to make it live again for the reader. He traces the disappointment antiquaries felt when they were unable to complete their task due to a lack of evidence, and the impetus given to their endeavour by events, especially the dissolution of the monasteries. The first to undertake research into the natural history of a county, John Aubrey, holds a transitional position in this schema: he appears to be one of

[5] Broadway, *'No historie so meete'*, pp. 7-9, 232-235.

[6] Ibid., pp. 57-76.

the last figures of the 'old' generation, before his 'new' successors, including county natural historians Charles Leigh and Robert Plot, alongside naturalist Edward Lhwyd.[7] I will demonstrate, that despite the shift Vine describes, county natural historians *did* share a keen interest in restoring or at least preserving the past. Their intentions had, it will be shown, developed markedly from those of their predecessors, but this was an evolutionary progression rather than a generational shift.

It is worth noting at this point that I am by no means the first to consider the continuities in local and antiquarian study through the seventeenth century. Both Graham Parry in his *The Trophies of Time* (1995) and Samuel Mendyk in his *Speculum Britanniae* (1989) are exemplary here, documenting the intellectual change while focusing upon antiquarian research in the seventeenth century.[8] Parry and Mendyk's work belongs to a tradition of intellectual history of history which can be traced back to Douglas' seminal *English Scholars* (1939).[9] Indeed it is, I would suggest, their intellectual interests which encourage them to span either side of the 1660 'divide', to show the changes which occurred in this revolutionary period. The work of Daniel Woolf is perhaps the best example of

[7] This comes across particularly clearly within Hunter, *John Aubrey*. Also see Vine, *In defiance of time*, pp. 5, 21, 202; Swann, *Curiosities and Texts*, pp. 116-117; Mendyk, *'Speculum Britanniae'*, pp. 170-184.

[8] Graham Parry, *The trophies of time : English antiquarians of the seventeenth century* (Oxford, 1995); Mendyk, *'Speculum Britanniae'*.

[9] Among which particularly noteworthy works include: Joseph M. Levine, *Humanism and history : origins of modern English historiography* (Ithaca, 1987); Joseph M. Levine, *The autonomy of history : truth and method from Erasmus to Gibbon* (Chicago, 1999); Ferguson, *Clio unbound : perception of the social and cultural past in Renaissance England*; F.J. Levy, *Tudor Historical Thought* (San Marino, 1967); David C. Douglas, *English Scholars* (London, 1939).

more recent historiography on historical studies written in the seventeenth century. His work is strongly influenced by cultural history and provides a nuanced understanding of the connections between social and intellectual change, making an important contribution to our understanding of memorial culture and the perception of the past. Importantly, he has convincingly argued that historical interest and what he terms a 'historical culture' spread far wider than those involved in formal historiography.[10] In many ways his work, focusing on wider shifts regarding society's relationship with the past, provides the context for the more narrowly-focused work of Broadway and Vine.

The argument I will put forward is that the socio-cultural predecessors of the later Stuart county natural historians were neither naturalists nor historians, in contemporary parlance; they were antiquaries and chorographers. And, they drew extensively in their work on pre-Restoration antiquarian authors, as well as sharing many of the same cultural inspirations. For instance, John Aubrey's initial inspiration for local history came from the destruction wrought by the Civil War, mirroring the effect of the dissolution of the monasteries on antiquaries a century earlier. This destruction led to Aubrey's desire to record the world around him both for his own memory and, in an impulse strongly driven by the success of previous record-keepers, for posterity. Antiquaries had

[10] D. R. Woolf, 'The Image of the Antiquary in Seventeenth-Century England', in S. Pearce (ed.), *Visions of Antiquity: the Society of Antiquaries of London 1707-2007* (London, 2007); Woolf, *The social circulation of the past*; D. R. Woolf, *Reading History in Early Modern England* (Cambridge, 2000); D. R. Woolf, 'The Dawn of the Artifact: The Antiquarian Impulse in England, 1500-1730', *Studies in Medievalism* no. 4 (1992); Woolf, 'Memory and Historical Culture in Early Modern England'; D. R. Woolf, 'Erudition and the Idea of History in Renaissance England', *Renaissance Quarterly* 40 no. 1 (1987).

long been interested in both the written word (for example court records, family trees) and objects (for example Roman coins, church buildings); Aubrey was initially no different. It was with the changing socio-cultural and political setting following the Restoration, and particularly the emergence of the Royal Society, that this interest morphed into a more naturalistic focus.

Aubrey, along with Robert Plot, was heavily involved in the Royal Society and other central intellectual networks of the day; that is to say that the county natural historians participated in the intellectual changes which both Broadway and Vine argue mark the end of "early modern antiquarianism". Inspired by the examples of Aubrey and Plot, the next generation of county natural historians were more provincial: to give one example of how this manifested itself they were members of the Royal Society, but instead of attending meetings contributed by correspondence. At the same time they demonstrate a continuation of the cultural desire to "know" and record one's locality, illustrated by the continued existence of networks of interested gentry who were able and willing to financially support research by county natural historians such as Morton and Leigh into their locales.

The chapter is organised in a chronological fashion, with the first section exploring the motivation behind county natural history through a discussion of projects of local history through Tudor and Early Stuart England. This section draws heavily upon the work by Jan Broadway and Angus Vine discussed above. Following sections, based on more extensive primary research, take us through local history during the Civil War, Restoration period, and after the Revolution of

1688. Each section, as well as offering a narrative of local history centred upon the county natural historian, also offers commentary on the extent to which local history as a social practice had changed since the period investigated by Broadway and Vine. The conclusion to the chapter bridges the period, arguing that while the events of the Civil War, Restoration and Revolution did each provide break points in certain types of local history, the discipline as a whole continued to occupy a similar socio-cultural space, and continued to be undertaken by a similar "sort" of individual.

Before County Natural History: Antiquarianism in Tudor and Early Stuart England

As biographies of antiquarians in Tudor and Early Stuart England show, most were gentlemen, driven to an obsession with those 'remnants of history which have casually escaped the shipwreck of time'[11] by an insatiable curiosity.[12] Some spent years of their lives travelling the countryside looking for remnants of the

[11] Francis Bacon, 'The Advancement of Learning', in Heath, Spedding, and Ellis (eds.), *The works of Francis Bacon*, vol. 8, p. 423.

[12] In addition to those cited elsewhere in the chapter see: Beer, *Tudor England observed : the world of John Stow*; David Sandler Berkowitz, *John Selden's formative years : politics and society in early seventeenth-century England* (London, 1988); John Bold, *John Webb : architectural theory and practice in the seventeenth century* (Oxford, 1989); J. R. Brink, *Michael Drayton revisited* (Boston, 1990); Gadd and Gillespie, *John Stow (1525-1605) and the making of the English past : studies in early modern culture and the history of the book*; Richard F. Hardin, *Michael Drayton and the passing of Elizabethan England* (Manhattan, Wichita, 1973); Herendeen, *William Camden : a life in context*; Ernst A. J. Honigmann, *John Weever a biography of a literary assoc. of Shakespeare and Jonson, together with a photogr. facs. of Weever's epigrammes (1599)* (Manchester, 1987); Sharpe, *Sir Robert Cotton, 1586-1631 : history and politics in early modern England*; Gerald J. Toomer, *John Selden a life in scholarship* (Oxford, 2009); H. R. Trevor-Roper, *Queen Elizabeth's first historian: William Camden and the beginnings of English "civil history"* (London, 1971); Tyacke and Huddy, *Christopher Saxton and Tudor map-making*; Wright, *Sir Robert Cotton as collector : essays on an early Stuart courtier and his legacy*.

past; others spent a few hours, days, or weeks engrossed in what we would now know as archival research. As was discussed in the introduction, the explanation of this culture of curiosity has in recent years focused upon the role of wonder. In *Wonders and the Order of Nature, 1150-1750*, Daston and Park give a masterful narrative of the changing conceptions of wonder and curiosity from the High Middle Ages to the Early Enlightenment. One of their arguments regarding the fifteenth through early eighteenth centuries is that wonder and curiosity (separate concepts before and after) were intimately connected.[13] Indeed, opening the introduction to a recent volume heavily inspired by their work, Alexander Marr states: 'Curiosity and wonder share a common history'.[14] These works, along with much recent cultural history of science, have given a sense of early modern curiosity which is intrinsically linked to wonder, novelty, and exoticism. [15]

One of the claims of this thesis, upon which this chapter focuses, is that this coalescence, while it has led to a plethora of productive studies, fails to explain why it was that some gentlemen of the period would devote time, money and attention to the collection of often everyday local objects and information regarding one's local environment. Wonder, I argue, was not a

[13] Daston and Park, *Wonders and the order of nature*, esp. chapter 8, 'Curiosity and Wonder Allied', pp. 311-315.

[14] Alexander Marr, 'Introduction', in Robert John Weston Evans and Alexander Marr (eds), *Curiosity and wonder from the Renaissance to the Enlightenment* (Aldershot, 2006), p. 1.

[15] Among others: Marjorie Swann, 'The Compleat Angler and the Early Modern Culture of Collecting', *English Literary Renaissance* 37 no. 1 (2007); Swann, *Curiosities and Texts*; Whitaker, 'The culture of curiosity'; Daston, 'Attention and the Values of Nature in the Enlightenment'; Benedict, *Curiosity : a cultural history of early modern inquiry*.

necessary predicate of curiosity. So while antiquarians and county natural historians did have their eyes drawn to the wonderful, the undiscovered and the new, they were also curious about genealogical history, the collection of coins, the transcription of gravestones, and much besides which they would not have described as wondrous. This culture of curiosity, as Vine has demonstrated for the Tudor and early-Stuart period, was focused chiefly upon 'the past'.[16] As well as distinguishing my subjects by their 'curiosity', it is important to also make the distinction between this style of work and that of civil or chronicle historians and others interested in producing a historical narrative. With the exception of a sense of chronology inherent in genealogical interest, the natural historians had little interest in constructing a wide-ranging narrative of events. As a result the majority of their notes, their published works, and their correspondence are organised thematically. So, the subjects we are concerned with are a group of gentlemen curious about remnants of the past, but without the intention (genealogy aside) of producing an all-encompassing narrative.

Antiquarian and historical interests, Daniel Woolf has convincingly argued, were often spurred by one of two fields: humanist philology and peripatetic topography.[17] Words and things were alternative or complementary routes into one area of interest (the past) in the minds of a swathe of gentlemen in the form of antiquarian or local historical endeavour. Turning first to words, Broadway has shown how several aspects of gentry culture, particularly those

[16] Vine, *In defiance of time*, p. 18.

[17] Woolf, *The social circulation of the past*, pp. 141-150.

centred around familial loyalty, could spur local historical interest and extensive archival research. Tracing a family history in order to prove the continuity of their line had obvious social benefits in a culture, prior to the Civil War, which valued tradition, arguably, above all else. An interesting facet is the changing 'fashions' in tracing one's history: towards the end of the sixteenth century the most enhancing heritage was one which stretched back to the Conquest; but early in the seventeenth century it was preferable to go further back to find Saxon lines.[18] Whether in consultation with a herald or doing the research himself, the gentleman would be interacting with a range of interesting written records, encountering a huge range of local miscellanea.

The other route into local history traced by Woolf is the habit of travel which led many gentlemen to an interest in local topography. Through the Tudor years travel increased: the gentry went to universities as young men, attended court and parliament in London, and travel for both pleasure and education was a growing trend. Between this and an increased availability and use of national maps an appreciation of space was carried alongside that already held for the past.[19] Travel in the sixteenth and seventeenth century was an inherently slow affair, involving regular stops en-route to rest or change horses. At these rest stops, as well as while travelling, we might reasonably suppose that gentlemen could have seen something, anything, that caught their eye and spurred their

[18] Broadway, *'No historie so meete'*, pp. 153-159.

[19] Andrew McRae, *Literature and domestic travel in early modern England* (Cambridge, 2009), pp. 7-14, 174-185; Swann, *Curiosities and Texts*, pp. 97-148.

curiosity. It is a short imaginative leap to see our exemplary early modern gentleman describing or even illustrating the objects which he had encountered.

In some individuals this simple interest went far beyond the description of a single location which had caught their eye, and became a process of mapping the nation. When interest and curiosity turned into obsession and a "project", one of the things which an early modern gentleman did was to look to precedents; who had undertaken a similar process of research and nation-mapping before? Perhaps the most important, and widely read, example was the Cestrian monk Ranulf Higden's (d. 1364) seven-book *Polychronicon* (ms 1327). By 1387 it had been translated into English, and *the discrypcion of Britayne* was printed in 1480, just four years after William Caxton (c.1415-1492) set up the first press in England, demonstrating the extent of interest in descriptive history. This text was regarded as standard historical fare into the seventeenth century, covering physical and political geography as well as a plethora of antiquarian detail.[20] John Leland (1506-52) spent six years on a project to produce a topographic survey of England intended to bring Higden's *discrypcion* up-to-date through the integration of recent developments in the observation and interpretation of physical artefacts, with a particular focus on coins, inscriptions, and documents. While virtually all of his work remained unpublished, the

[20] N. F. Blake, 'Caxton, William (1415x24–1492)', *Oxford Dictionary of National Biography*, 2004. <http://www.oxforddnb.com/view/article/4963> (12th March 2010); Mendyk, *'Speculum Britanniae'*, pp. 35-47; Antonia Gransden, *Historical writing in England. II c. 1307 to the early sixteenth century* (London, 1982), pp. 43-44; William Caxton, *The description of Britain*. Edited by Marie Collins and Deborah Pownal (London, 1988), p. 68. The copy of Polychronicon owned by antiquarian Sir Robert Cotton (d.1631) is British Library, Cotton MS Otho C XVI, Ranulf Higden, Polychronicon (extracts), 15th Century

manuscripts were copied and circulated through antiquarian networks for at least two centuries: Plot himself procured a copy of Leland's 'Notes of some families of Staffordshire' around 1682.[21] It was Leland's manuscripts which were the first to use the 'shire' as a historical unit, and it was widely adopted by topographers and antiquarians thereafter.[22] The adoption of the county as the classificatory system for William Camden's seminal *Britannia* (1586) was particularly important in this. This work went through seven Latin editions in the first twenty years of its life, before being translated by Philemon Holland (1552-1637) into English in 1610, and revisions continued through to 1720 with the publication of a 4,500 page, six volume work by Thomas Cox.[23]

While in the half-century centred upon 1600 there was significant attention being given to the national picture, there were also the first indications of an interest in producing county histories; this began to situate the county as an object of study in and of itself. In 1576 William Lambarde (1536-1601)'s *Perambulation of Kent* was the first local topography to be printed. This work

[21] F. Madden, B. Bandinel, and J.G. Nichols, *Collectanea topographica et genealogica* (London, 1836), p. 338.

[22] British Library, MS Sloane 855, anon., 'An account of Leland and his writings', c. 1700; M. W. Greenslade, 'Introduction: County History', in C. R. J. Currie and C. P. Lewis (eds), *English County Histories: A Guide* (Gloucestershire, 1994), pp. 9-10.

[23] Mary Terrall, 'Heroic Narratives of Quest and Discovery', *Configurations* 6 no. 2 (1998), p. 227; Camden, *Britain... written first in Latin by William Camden*; Edmund Gibson, *Camden's Britannia, or a Chorographical Description of Great Britain and Ireland* (London, 1695); Thomas Cox, *Magna Britannia et Hibernia, Antiqua & Nova. Or, A New Survey of Great Britain, wherein to the Topographical Account given by Mr. Cambden, and the late Editors of his Britannia, is added a more large History, not only of the Cities, Boroughs, Towns, and Parishes mentioned by them, but also of many other Places of Note, and Antiquities since discovered... Collected and Composed by an impartial Hand* (London, 1720).

was also important in demonstrating the use of maps in county history for the first time, including a national map in the preface to form the basis for an introductory discussion of the seven kingdoms of England- a preamble to the main subject of the perambulation of Kent itself.[24] As the century drew to a close both the complexity of the maps themselves and their localisation increased, a development best charted through a discussion of the influential John Norden (1648-1625). Norden was fascinated by the mathematical aspects of geography, particularly the methodology of surveying, and this showed clearly in his extensive collection of county geographies, which he intended to compile into a national series. Of these, only those of Middlesex and Hertfordshire were completed and printed in his lifetime; however, manuscript versions of his work on many other counties were widely circulated over the following century,[25] including those of Norfolk, Berkshire, Dorset, Sussex, Northamptonshire, and Essex.[26] His maps, such as the one below of Middlesex which was published in 1593, show clearly how his mathematical and descriptive interests fed into each

[24] Lambarde, *A perambulation of Kent* p. 1.

[25] Mendyk, *'Speculum Britanniae'*, pp. 54-74.

[26] Norden, *Speculum Britanniae*; Essex Record Office, T/A 299, Norden, John, copy of Description of Essex, 1594; Bodleian Library, MS top Northants e 17, Norden, John, account of Northants (copy- original in Bibliotheque Nationale de France), 1595; Bodleian Library, MS Rawl Essex 29, Norden, John, survey of Berks, Dorset and Sussex, 1595-1615; John Norden, *Nordens preparatiue to his Speculum Britanniae. Intended a reconciliation of sundrie propositions by diuers person tendred, concerning the same* (London, 1596); John Norden, *1598 Speculi Britan[n]iae pars the description of Hartfordshire* (London, 1598); British Library, Add MS 42508, John Norden, surveys of Hertfordshire manors, 1603; John Norden, *The Surveyors Dialogue. Divided into five Bookes* (London, 1607); Norfolk Record Office, MC 755/4, Book of Transcripts compiled by Francis Blomefield, 'An Historicall and Chorographicall Description of Norffolck', attributed to John Norden and related papers, c. 1603

other, and how he augmented the detailed description of items discussed in the work by showing their precise location.

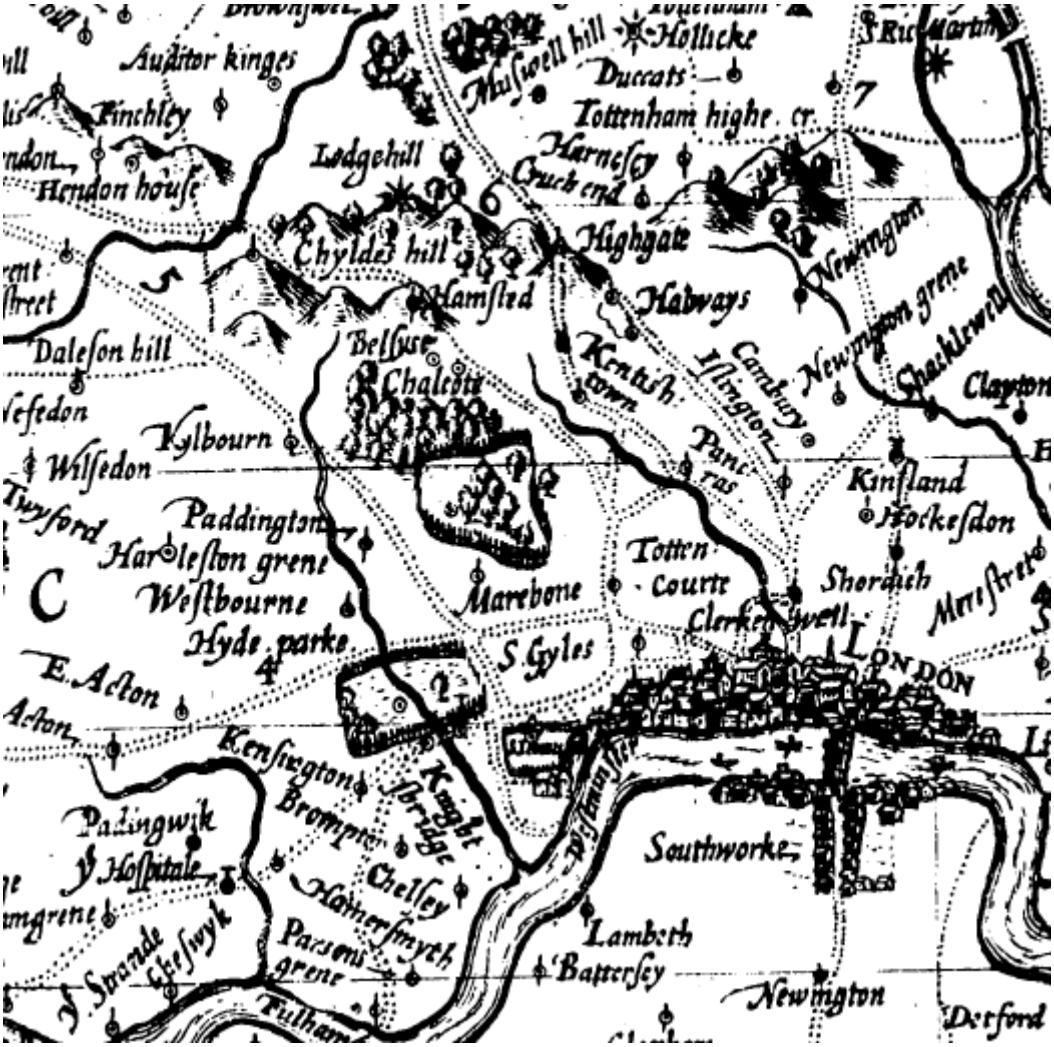

Figure 1- Map of Middlesex. Source: Norden, *Speculum Britanniae*, pp. 14-15.

Surrounding each page was an alphanumeric system familiar to those of us who still use local A-to-Z road maps today, which Norden saw as 'a matter of so great facility as needeth no example'.[27] This system also served as a scale for readers, with each large division representing two miles and 'crossing lines' extended through the map, as can be seen above, enabling the quick estimation

[27] Norden, *Speculum Britanniae*, 'advertisements concerning the use of this labour'.

of distances. The precision which he displayed in his mapping was also used to imply a commensurate precision in the textual content of the work. Both his inclusion of roads and the alphanumeric location system allied to precise plotting were very unusual among contemporary works: indeed in a simplified version of Norden's map, printed in the 1610 edition of William Camden's *Britannia* and in part reproduced below, both the roads and alphanumeric location system were removed and significant decoration around the key was added. While Norden was an exception and in many ways before his time, for most in the early seventeenth century an antiquarian map was not to be used as a navigation aid, but instead as an illustration of the cultural setting of the work in question: scale could therefore be distorted to suit aesthetic preferences, and the decoration was almost as important as the contents of the map itself. However, due to the accuracy of Norden's map the details were by and large copied directly, so the accuracy he brought to the study underlay the descriptive focus of Camden and others. The value of this precision, both in the indicative sense of quality it gave to the work and particularly in the ability it gave writers to refer exactly to a specific location, came to be seen as of vital importance in later works.

Figure 2- Amended Copy of Norden's Map of Middlesex. Source: Camden, *Britain* (1610), pp. 418-9.

One aspect which almost all county maps produced in the period shared was the location of the gentry in their county; this sense of an owned past was also important in the development of the mentality of the chorographers and later natural historians. Houses of the gentry, and often their lands, were identified, and their social rank presented in several fashions- in Norden's case the key distinguished between royalty, nobility and gentility, while the work itself discussed the rank of individual families. In 1611 John Speed (1551/2-1629)

published *The theatre of the empire of Great Britain, presenting an exact geography of England, Scotland, Ireland, etc.*[28] His graphic representation of the link between the gentry and the county, both in terms of the individual gentry who were named on other maps and the gentry as a class, as depicted surrounding the map below, was an important part of the evolution of county consciousness.[29] From the top right corner, moving clockwise, this map illustrates the dress and bearing of a nobleman, a gentle woman, a citizen, a country woman, a countryman, a citizen's wife, a gentleman and a lady.

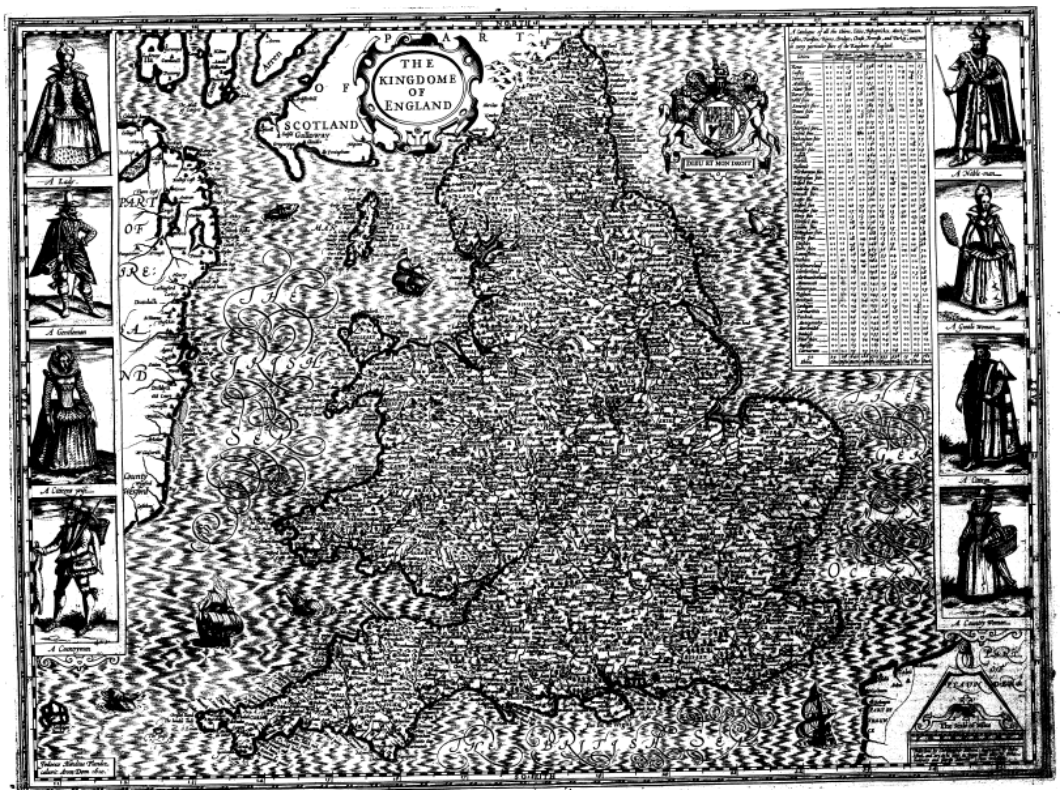

Figure 3- Map Illustrating Social Ranks. Source: Speed, *Theatre of the Empire*, pp. 5-6.

[28] Speed, *The theatre of the empire of Great Britain*.

[29] Cormack, '"Good Fences Make Good Neighbors": Geography as Self-Definition in Early Modern England', p. 661; Helgerson, *Forms of nationhood : the Elizabethan writing of England*, pp. 114-126.

Here Speed clearly illustrates the importance of displaying social rank as a generality, and Norden's key shows its concurrent importance in local studies; the gentryfolk of Middlesex had literally been 'put on the map'. Alongside this increasingly visual recognition of their place in society, gentlemen were spurred to pursue their own amateur topography by its simplicity- the methodology utilised in Higden, Leland and Camden's work was one which could be undertaken by any educated and interested gentleman on his travels, regardless of whether he was a scholar.[30] The primary method was descriptive, with the extensive referencing of ancient texts being an addition, important for scholarly verification but not necessary for personal or familial gratification. By 1600, while the production of accurate county maps required either specialist skills or considerable investment to procure such, the description of one's county, or one's local area, was within the reach of many gentlemen, and had obvious attractions in locating the family lands or line in their place in addition to genealogical time.

The celebration of genealogy, place, and history intermingled closely, and indeed the situation of particular objects and places in time was an important aim of local history- the predominant one when it came to antiquarian study, but also important to chorographers. Restoring or at least recovering place names- particularly Roman place names which brought with them significant social cachet- was one of the primary aims of local historians in Tudor and Early Stuart England, as can be seen from the work of Abraham Ortelius

[30] Broadway, *'No historie so meete'*, pp. 15-20.

(1527-1598) and William Camden in the late sixteenth century. Camden wrote to Ortelius requesting a transcription of the Antonine Itineraries- lists of Roman settlements and way-marks which contained significant geographical information on fifteen different routes across Britain.[31] Camden's aim here was to 'renew ancientrie, enlighten obscuritie, cleare doubts, and recall home veritie by way of recovery'- a thoroughly humanist project reliant upon ancient texts to a greater extent than collaborators and local observers throughout the country.[32] The prestige which a Roman place name was thought to bring to a town or county should not be underestimated; as one anonymous sixteenth-century writer put it in his commonplace book: 'antiquity [is to be] reverenced and idolized'.[33] Particularly noteworthy was the way in which discovered objects, such as Roman antiquities or monuments, were treated in a manner which celebrated the place in which they were found. For instance, at a town in Lincolnshire 'named Paunton, which standeth much upon the antiquity thereof, where are digged up oftentimes pavements of the Romans wrought with checker worke'.[34] The Roman remains are not described as inherently valuable, but their discovery underneath Paunton brought value to the town. That is to say, the value of an ancient object was not inherent, but was emplaced in the locale in which it had been found.

[31] Vine, *In defiance of time*, 81.

[32] Camden, *Britain... written first in Latin by William Camden*, p. 4.

[33] British Library, MS Sloane 517, anonymous commonplace book, 16th Century, f. 100r.

[34] Camden, *Britain... written first in Latin by William Camden*, p. 537.

Beyond the curious impulse, or alongside it, one of the primary drives towards recording the monuments and antiquities within a locale was religion. Pilgrimages to religious sites (wells, caves, trees, and of course chapels) were common under Catholicism, but, traditional historiography argues, increasingly rare after the Reformation.[35] Walsham has recently challenged this picture by pointing to the continued or even increasing use of natural features as sacred sites in written work: while man-made shrines and churches were being dismantled, aspects of the landscape were becoming increasingly sacralised. She demonstrates, in particular, the impact of the dissolution of the monasteries under Henry VIII which spurred many individuals' desire to record the world around them, for decades to come. By the turn of the seventeenth century the monasteries were seen, Walsham argues, through 'rose coloured spectacles', presented by Camden for instance as 'seed-gardens from whence Christian Religion, and good learning were propagated'.[36] But this practice was not without opposition, and even towards the turn of the eighteenth century when the High Church supporter Sir Henry Chauncy (1632-1719) published his *Antiquities of Hertfordshire* (1700) opponents suggested that he was overly sympathetic to a lost catholic fabric of the sites he surveyed.[37]

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[35] John Bossy, *The English Catholic community, 1570-1850* (New York, 1976), p. 282; Christopher Haigh, 'The Continuity of Catholicism in the English Reformation', *Past and Present* no. 93 (1981), pp. 65-69.

[36] Walsham, *The reformation of the landscape*, pp. 276-277; Camden, *Britain... written first in Latin by William Camden*, p. 5.

[37] M. Knights, *The Devil in Disguise: Deception, Delusion, and Fanaticism in the Early English Enlightenment* (Oxford, 2011), pp. 59-61..

The delineation of religious meaning and the satisfaction of naturalistic or antiquarian curiosity were not explicitly opposed intentions, of course; the two intermingled in ways which are yet to be explored in any detail for this period in England's history. As will be discussed at more length in chapter four, this historiographical omission is by no means surprising: since the general rejection around 1990 of Merton and later Webster's theses regarding Protestantism's role in the scientific revolution,[38] links between religion and naturalistic enquiry have been underexplored in general.[39] This chapter, meanwhile, limits itself in this area to showing that religious considerations acted alongside and interacted with the desire to locate and eulogise one's family or community in cartographic and temporal terms.

Whether primarily inspired by cartography, antiquity or religion, it was in correspondence with like-minded gentlemen that the interests of an individual were sharpened and (re)directed. Indeed, correspondence networks were vital in the production of many larger scale antiquarian and local histories. In particular, as *Britannia* was revised and expanded through the production of its six editions

[38] Robert K. Merton, 'Puritanism, Pietism, and Science', *The Sociological Review* 28 no. 1 (1936); Charles Webster, *The great instauration : science, medicine and reform, 1626-1660* (New York, 1976); I. Bernard Cohen, K. E. Duffin, and Stuart Strickland, *Puritanism and the rise of modern science : the Merton thesis* (New Brunswick, 1990); John Hedley Brooke, *Science and religion : some historical perspectives* (Cambridge, 1991); Richard W. F. Kroll, Richard Ashcraft, and Perez Zagorin (eds.), *Philosophy, science, and religion in England, 1640-1700* (Cambridge, 1992).

[39] See the short and typical accounts of religion given in textbook studies: e.g. Henry, *The scientific revolution and the origins of modern science*, pp. 85-97; Shapin, *The scientific revolution*, pp. 135-155. Notable recent exceptions to this trend include Kevin Killeen, *Biblical scholarship, science and politics in early modern England : Thomas Browne and the thorny place of knowledge* (Farnham, 2009); Peter Harrison, *The Bible, Protestantism, and the rise of natural science* (Cambridge, 1998); Harrison, *The fall of man*.

during Camden's life, it was fellow antiquaries in northern counties on whom he relied the most, both because the north was most remote from Camden's own location, and because such a large quantity of Roman antiquities in particular were found there. Camden did make one extended trip through the northern counties alongside Robert Cotton (1571-1631) in 1599 while preparing the second edition of *Britannia*, as well as a couple of short visits on other occasions, but was otherwise reliant upon correspondence for new evidence and corrections. This element of cooperation was vital for Camden's revisions, providing information particularly regarding physical remains which Camden would not otherwise have been able to access without travelling more widely himself.[40] Perhaps as a result of the extensive use of correspondence in their formation, or because of the perception of a limited market interested in local histories, most county histories and snippets of information regarding the chorography of a locale were circulated in manuscript form through correspondence networks involving interested parties, rather than being printed.[41] A secondary impact of this type of cooperation was the spreading of historical curiosity. For instance, contributors such as Francis Godwin (1562-1633), Bishop of Llandaff, who corresponded with Camden from the 1590s, were

[40] David McKitterick, 'From Camden to Cambridge: Sir Robert Cotton's Roman Inscriptions, and their Subsequent Treatment', in C. J. Wright (ed.), *Sir Robert Cotton as collector : essays on an early Stuart courtier and his legacy* (London, 1997), p. 94; Vine, *In defiance of time*, pp. 80-108; Parry, *The trophies of time : English antiquarians of the seventeenth century*, pp. 22-48.

[41] Vivienne Larminie, 'Gentry Culture in the Seventeenth Century', in Christopher Dyer (ed.), *William Dugdale, Historian, 1605-1686: His Life, his Writings, and his County* (Woodbridge, 2009), pp. 4-6.

encouraged to develop their curiosity into a more extensive form. After perambulating with Camden through Wales, providing him with a transcript of an Anglo-Saxon charter, and associating with members of the Elizabethan Society of Antiquaries, by 1603 Godwin was going on extended travels himself through Glamorgan searching for antiquities.[42] While his later career tended towards national rather than local history, and textual rather than physical curiosity,[43] it was the correspondence and cooperation with peers such as Camden and Cotton which encouraged this historical curiosity.

The hubs around which these correspondence networks circulated, and within which many of them were initially formed, were often institutional, and they changed character through the sixteenth and early seventeenth centuries. The career of John Leland illustrates both the role of the monarch in providing patronage and the dissemination methods used by local historians in the sixteenth century. From 1533 he had been supported by the patronage of King Henry VIII with specific commissions for research and the provision of rectories in Calais and later Oxfordshire, though not the title of Royal Antiquary as some scholars had assumed.[44] Leland's most ambitious project began in 1539, lasting over the following six years. He travelled through England and Wales to produce a report regarding the antiquities which were to be found, which was

[42] Woolf, 'Erudition and the Idea of History in Renaissance England', p. 30; British Library, MS Cotton Julius F. VI, Francis Godwin to William Camden, 14 July 1603, f. 297.

[43] D. R. Woolf, 'Godwin, Francis (1562–1633)', *Oxford Dictionary of National Biography*, 2004. <http://www.oxforddnb.com/view/article/10890> (14 July).

[44] James P. Carley, 'Leland, John (c.1503–1552)', *Oxford Dictionary of National Biography*, 2004. <http://www.odnb.com/view/article/16416> (14 July).

subsequently published by a contemporary as *The Laboryouse Journey and Serche of John Lelande for Englandes Antiquityes* (1549). The most important aspect of this work, though, was an unpublished manuscript entitled *Commentarii de Scriptoribus* which was given to Henry VIII as 'a new yeares gift'- a catalogue of manuscripts which Leland had visited throughout the country and which due to its unsurpassed accuracy and depth of content was still vital to the work of local historians through to the late eighteenth century.[45]

William Lambarde, on the other hand, was a lawyer by profession. His familiarity with Anglo-Saxon legal documents combined with his involvement in the administration of Kent, for instance as commissioner of sewers from 1568, led to the idea of producing a survey of Kent itself. His survey drew on both his extensive textual research, and his topographic skills developed due to his infrastructural work. In many ways, this is the exemplary genealogy of chorography: a topographic concern with place melding with textual and antiquarian concern with time. His *Perambulation of Kent: Containing the Description, Hystorie and Customs of that Shyre*, the first published county history, was printed in 1576 after several draft manuscripts, which were circulated themselves among interested parties. Subsequently his antiquarian and topographic interests took a low second place to his interests in manuscript remains of the past. Explicitly using the past to justify the laws of the present, he

[45] 'The laboious journey and search of John Leland for England's antiquities, given of him as a New-Year's gift to King Henry the Eight in the thirty seventh year of his reign', in W. Huddesford and T. Warton (eds.), *The lives of those eminent antiquaries John Leland, Thomas Hearne, and Anthony à Wood: with an authentick account of their respective writings and publications, from original papers* (London, 1772), vol. 1, pp. 35-39.

became involved in national record keeping on appointment to Keeper of the Records in the Tower of London, with the highlight of his tenure perhaps being his presentation of a historical description of the royal manuscripts to Queen Elizabeth in person.

The Elizabethan Society of Antiquaries, founded in 1586 under the direction of William Camden, also demonstrates the popularity of antiquarianism at this time among those who were involved with official records, including heralds, court-appointed record keepers, and lawyers such as Lambarde. The society and its members also demonstrate a widening of the patronage networks able to support antiquarian and topographic research in the latter sixteenth century. These antiquarians met regularly, normally in the Heralds' office, and while the society was strictly private some of the 'discourses' presented at the meetings were disseminated in manuscript form and ended up in the hands of non-members, remaining in circulation for generations thereafter.[46] While Elizabeth, it seems, supported many of the members of the society in their individual endeavours, she did not respond positively to the request the society made for incorporation in the form of an academy endowed with Sir Robert Cotton's library. James I was more openly hostile to the idea of a society of antiquaries, and by 1608 the Elizabethan Society had become completely

[46] A large selection of these discourses were later printed in T. Hearne and T. Evans, *A collection of curious discourses written by eminent antiquaries upon several heads in our English antiquities: Together with Mr. Thomas Hearne's preface and appendix to the former edition. : to which are added a great number of antiquary discourses written by the same authors. : most of them now first published from the original manuscripts. : With an account of the lives and writings of the original Society of antiquarians* (London, 1773).

inactive, with an attempt to revive it in 1614 being withdrawn on learning of James I's 'mislike'.[47]

Charles I, likewise, gave no particular support to local historical or antiquarian endeavour. In 1629, for instance, he closed the library of Sir Robert Cotton with the suggestion that archival collections in the hands of a private citizen could be a danger to the state.[48] Cotton's library contained an amazing breadth and depth of manuscript resources, housing, for instance, over a hundred volumes of original and transcript state papers. Under James there had been unsuccessful suggestions of the library being part of a new incorporated academy of antiquarians, but it was not until 1702, when Sir Robert's grandson donated the collection to the nation, that the collection was made officially public (though access had been allowed to selected individuals for much of the seventeenth century).[49]

Direct Royal support for antiquarian and chorographic research, then, was not often available under James I and Charles I, and by no means as important as it had been under Elizabeth I. Centralised study of the localities of the nation was correspondingly rarely undertaken. However, local research continued unabated, carried out principally through provincial networks, perhaps

[47] Linda Van Norden, 'Sir Henry Spelman on the Chronology of the Elizabethan College of Antiquaries', *The Huntington Library Quarterly* 13 no. 2 (1950), pp. 131-160; R. J. Schoek, 'The Elizabethan Society of Antiquaries and men of law', *Notes and Queries* no. 199 (1954), pp. 417-421; also see Joan Evans, *A history of the Society of Antiquaries* (Oxford, 1956).

[48] J. P. Kenyon, *The history men : the historical profession in England since the Renaissance* (Pittsburgh, 1984), p. 23.

[49] Fussner, *The historical revolution: English historical writing and thought, 1580-1640*, pp. 141-149.

most prominently the one concentrated around William Burton (1575-1645). Burton had worked with historians in Staffordshire and Leicestershire since the turn of the century, and developed a particular interest in church history as well as wider antiquarian endeavour. His copy of Leland's *Itinerary* was circulated among the Midlands antiquarian community, and then eventually donated to the Bodleian Library.[50]

Bodley's library at Oxford was one of the sections of university life amenable to antiquarian study, and indeed the Bodleian, as a repository for a huge range of manuscripts, was to become central to research as the century progressed. It was named after Sir Thomas Bodley (1545-1613) whose generous donation in 1598 had made the library the most prestigious in England. After a large extension in 1634-7, the library began to receive more regular gifts of books and, perhaps more importantly, manuscripts, attracting scholars wishing to consult them from throughout Europe.[51] On the back of this expansion the library became a centre for antiquarian research, and in particular the deposition, collection and viewing of manuscripts from throughout the country. By 1653, Anthony Wood (1632-1695) referred to the Arts End of the Bodleian as 'where the books of English history and antiquities stand'.[52] This library remained vital in the work of local historians well into the eighteenth century, as undeniably it remains for historians today.

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[50] Broadway, '*No historie so meete*', p. 42.

[51] Woolf, *The social circulation of the past*, p. 171.

[52] Andrew Clark (ed.), *The life and times of Anthony Wood, antiquary of Oxford 1632-1695, described by himself*, 5 vols. (Oxford, 1891-1900), vol. 1, p. 182.

However, neither Oxford nor Cambridge included national or local history within the curriculum; their history lectureships established in 1621 and 1627 respectively, focused entirely on classical history, despite Oxford's being named after William Camden. That said: the evolving tutorial system did give some space for the encouragement of local historical research due to the enthusiasm of particular groups of tutors attracted to particular Colleges; for instance, Magdalen Hall at Oxford had a number of 'descriptive geographers' as fellows throughout the early seventeenth century.[53] Descriptive geography was a sub-discipline descended from the Greek geographer Strabo, who found geography useful 'as regards the activities of statesmen and commanders, but also as regards knowledge of the heavens and of things on land and sea, animals, plants, fruits, and everything else to be seen in various regions.'[54] In other words, it was a description of the world around an individual, which for the early Stuart scholar also included the past of that world. Thus, while history was excluded from the formal curriculum, the university did provide an important space in which young gentlemen could network, forming the life-long bonds around which correspondence networks were grafted and developed, enabling both collaboration in and circulation of research in manuscript form.[55]

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[53] Cormack, '"Good Fences Make Good Neighbors": Geography as Self-Definition in Early Modern England', pp. 641-650; Lesley B. Cormack, "Non sufficit orbem: Geography as an Interactive Science at Oxford and Cambridge, 1580-1620" PhD thesis (University of Toronto, 1988).

[54] J. R. Sitlington Sterrett (ed.), *The geography of Strabo*, 8 vols. (London, 1917-1932), vol. 1, p. 3.

[55] Larminie, 'Gentry Culture in the Seventeenth Century', pp. 4-6; Heal and Holmes, *The gentry*, pp. 261-275.

County-based research was, then, by the early Stuart period a common pursuit. The use of maps and improving mathematical geography had from the late sixteenth century increasingly encouraged a focus upon the county as the primary unit of definition. The interaction of this mathematical geography with its descriptive counterpart allowed these maps to display both spatial and cultural features alongside one another. The links, in particular, between the gentry as a group of people and their counties were manifested clearly. This spatial construction within which people could situate their homes and their travels was one of the most common attractants of the curiosity of the seventeenth-century gentleman, and combined with the religious and historical elements of curiosity to make local history a key part of the process by which the identity of one's family and locality was formed in the period. As I have shown, the communication of these interests took place primarily through correspondence networks, which were often formed through mutual affiliations with the University of Oxford (or Cambridge, though Oxford was predominant). The patronage of the monarch was variable, and if anything, its absence in the early Stuart period further reinforced the centrality of Oxford, and in particular Bodley's library, as the hub around which correspondence networks could turn.

The Civil War: Rupture or Catalyst?

As Braddick puts it, the Civil War (1641-51) was 'one of the most destructive conflicts in English history… huge amounts of property had been destroyed. Armies had trampled the land, bringing in their wake terrible plagues… To many

contemporaries these were unmistakeable judgements of God on a sinful land';[56] as historians we cannot ignore the religious element of either the actions, or such responses to them. Aubrey refers to 'barbarous soldiers', 'Puritanical zealots' who were committing this (as he saw it) wanton destruction driven by a 'fanatic rage'[57]. Thomas Ford (1598-1674), likewise, refers to 'the giddy zeal of the times which destroyed so many ancient monuments'.[58] The perceived root of the majority of the destruction was ideological, though some acts, like taking lead from roofs or pipes from an organ could be justified on the grounds of necessity (both were usable for munitions).[59] Thus, to Aubrey and his fellows, it was ideological conflict that provoked the destruction which in turn spurred both the avoidance of (public) conflict and a strong desire to preserve the world around them, once the situation made it possible to do so.

This intensely destructive period was also an apparent rupture in the development of local study. As open warfare broke out, sometimes involving people who had previously shared a county, or even family, the identities discussed above were questioned leading to a decline in genealogical and connected antiquarian research. Added to which, the hazards of travel in the period, social unrest, and the occupation of the gentry in political affairs saw a

[56] M. J. Braddick, *God's fury, England's fire : a new history of the English civil wars* (London, 2008), p. xxii.

[57] Bodleian Library, MS Aubrey 3, John Aubrey, An Essay towards the Description of the North Division of Wiltshire, ff. 148, 151, 181v.

[58] Cambridge University Library, MS Mm. 6.50 (Covel transcripts), Thomas Ford to John Covel, n.d., ff. 204-205.

[59] Barbara Donagan, *War in England : 1642 - 1649* (New York, 2008), p. 86. cites Bodleian Library, MS Tanner 61, f. 149v; Tanner 303, f. 135; National Archives, SP 128/126, ff. 134-145; Devonshire Record Office, Seymour MSS 1392 M/L, 1644/1322.

reduction in the popularity of touring through the countryside which had been the mainstay of those local historians with primarily topographic interests. At the same time patronage, on which most local research rested, had become more difficult to garner. Particularly problematic was the dearth of crown appointments, which had been the mainstay of Elizabethan antiquarianism, and had been indirectly providing an income for many of those pursuing local research through their employment as heralds and other positions within royalist networks. Due to a combination of these factors, it has been assumed that there was little local study undertaken in the period, which seems to be supported by the fact that no local histories or geographies were printed during the 1640s.[60]

That some local historical research was stopped in its tracks by the Civil War is well documented. The antiquary Thomas Habington (1560-1647), who had completed a parish by parish account of Worcestershire up to Elizabeth's reign stretching to 760 pages, along with a small folio on Worcester Cathedral, was unable to bring his work to completion due to the 'impetuous storm' of Civil War. He was so worried about the work he had done that he sent it to fellow antiquary Sir Simon Archer, very fortuitously given that shortly afterwards his house was 'ransacked & (to use the new word) plundered' by the soldiers.[61] Others, who were able to continue their research for at least some of the period, were nonetheless unable to bring their work to press. John Trussel (bap. 1575, d.

[60] Larminie, 'Gentry Culture in the Seventeenth Century', pp. 124-125; Broadway, *'No historie so meete'*, p. 40; Mendyk, *'Speculum Britanniae'*, p. 24.

[61] Shakespeare Birthplace Trust, DR37/2/87/103, Correspondence: Archer of Tamworth, 27 November 1642

1648), whose *Touchstone of Tradition* was begun in 1636 and revised, when political conditions allowed, through to 1647, found that by the time he had completed his research two of his major patrons were unable to assist in the printing of it. While the Bishop of Winchester, for whom Trussel was an alderman and steward, had fled the city to escape the advancing parliamentary forces, the Marquis of Winchester did not flee, and was held a parliamentary prisoner.[62]

In addition to a loss of royalist patronage and the potential for the destruction of their completed work, many antiquaries thought that their sources were under threat from parliamentarian looting. While on occasion the extent of this threat was exaggerated by royalist propaganda, the defacement of William Camden's monument, the burning down of old buildings and extensive destruction of church glass all provides evidence to show that this threat was not purely imagined.[63] Likewise, at the end of the century when compiling his *English Historical Library*, Bishop Nicolson (1655-1727) lamented the destruction of family pedigrees, monuments, and private and public records.[64]

However, significant research was still being undertaken in locales more removed from the fighting. While topographic research was curtailed, the

[62] Broadway Broadway, *'No historie so meete'*, pp. 47-49.

[63] S. Porter, *Destruction in the English Civil Wars* (Dover, NH, 1994), pp. 64-89, 134-140; Wyman H. Herendeen, 'Camden, William (1551–1623)', *Oxford Dictionary of National Biography*, 2004. <http://www.oxforddnb.com/view/article/4431> (12th March 2010); John Aubrey, An Essay towards the Description of the North Division of Wiltshire, ff. 11v, 24v, 159.

[64] William Nicolson, *The English historical library, or, A short view and character of most of the writers now extant, either in print or manuscript which may be serviceable to the undertakers of a general history of this kingdom* (London, 1696).

investigation and recording of documentary evidence regarding land ownership and other practical matters was given added impetus by the volatile political atmosphere, and the destructive nature of the war itself would go on to inspire the next generation of antiquarians. Indeed, there is some evidence that the destruction of the Civil War actually *fostered* historical research. Some, such as the Yorkshire antiquary Roger Dodsworth (bap. 1585, d. 1654) and the royalist William Dugdale, took steps towards preventing the destruction of documentation, in the same way that Habington had attempted to preserve his work. Dodsworth transcribed documents from St. Mary's tower, York, preventing them from being lost when the tower was destroyed in the siege of 1644.[65] Dugdale, in addition to his own antiquarian work (which will be discussed later), attempted to encourage soldiers on both sides to be thoughtful in their actions towards antiquities, praising Sir Thomas Fairfax (1612-1671), the parliamentary commander, as a 'preserver of antiquities' when he offered a reward to those soldiers who retrieved charters from destroyed buildings.[66]

The destructive nature of the Civil War itself certainly acted as a spur to John Aubrey to record antiquities, which would last for the rest of his life. Aubrey had entered Trinity College Oxford in May 1642 but was sent home by his father that winter 'for fear' of the events unfolding, only returning to the college, 'then a garrison for the king', in the spring of 1643. Shortly afterwards, he 'got Mr.

[65] Conrad Hermann Josten (ed.), *Elias Ashmole, 1617-1692 : his autobiographical and historical notes, his correspondence, and other contemporary sources relating to his life and work*, 5 vols. (Oxford, 1966), vol. 4, pp. 35-37, 43.

[66] R. F. Ovenell, *The Ashmolean Museum, 1683-1894* (Oxford, 1986), pp. 11-13.

Hesketh, Mr. Dobson's man,[67] a priest, to draw the ruins of Osney two or three ways.' At the time Osney Abbey, now the site of Osney Marina, contained a mill which was used by the Royalists, and as a result Aubrey was concerned it would be a target if and when the Parliamentarians arrived.[68] His concerns were well justified. One of the plates which were commissioned by Aubrey was later published in Roger Dodsworth's *Monasticon Anglicanum* (1655), demonstrating that Aubrey was not the only individual who wanted to remember the past form of this particular Abbey following its destruction.

Aubrey, of course, was not the only gentleman of the period to have been concerned with recording objects, monuments, and buildings before they became the 'dismal remains of that confusion reigning in the unnatural Civil War, which yet we see the sad effects of', as Edward Steele put it while observing the remains of a church in Norfolk.[69] William Dugdale, along with the heraldic painter William Sedgewick (bap. 1609, d. 1663/4), presciently toured extensively through 1641, copying the inscriptions of religious houses and sketching monuments and coats of arms so that 'memory of them, in case of that ruine then imminent, might be preserved for future and better times.'[70] When the war erupted and

[67] Dobson was a well-known portrait painter, see the excellent DNB article: Katharine Gibson, 'Dobson, William (bap. 1611, d. 1646)', *Oxford Dictionary of National Biography*, 2004. <http://www.oxforddnb.com/view/article/7719> (14 July).

[68] J. Aubrey and R.W. Barber, *Brief lives* (1982), p. 8; 'Osney Marina', *Where Thames Smooth Waters Glide*, <http://thames.me.uk/s01750.htm> (20th July); Varley, *The siege of Oxford: an account of Oxford during the civil war, 1642-1646*, pp. 66, 106.

[69] Bodleian Library, MS Top. Gen.e.79, Edward Steele's parish notes, vol. I 1712, f. 248v.

[70] William Hamper (ed.), *The life, diary, and correspondence of Sir William Dugdale knight, sometime Garter principal king of arms. With an appendix, containing an account of his published works, and index to his manuscript collections, copies of monumental*

fighting became intense, Dugdale accompanied the King to Oxford, enabling him to continue his research in the Bodleian library. However, on the collapse of the Royalist cause in 1648 he was forced to go to France where he investigated the relationship between French religious houses and their English counterparts.[71] For others who were more provincial, their remoteness from unfolding events allowed their work to continue unabated. Indeed for some, such as an anonymous author of a partial history of Cheshire, the War made other activities impossible and the study of local history provided a retreat from a harsh reality. Likewise the effect of the Wars upon his business interests led William Grey to research and publish *Chorographica, or a survey of Newcastle upon Tine* (1649).[72]

It was the loss of land and fear thereof which prompted the continuation and extension of the tradition of genealogical history. The Civil War led to an extensive shift in land ownership and a volatile land market, as well as the destruction of landmarks which, as well as holding meaning to locals, were used to mark boundaries.[73] It was noted that 'the landmarks of our parish were cut down, and it would be difficult for posterity to find out the proper precincts which our parish are encompassed withal', making the recording of boundaries

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inscriptions to the memory of the Dugdale family, and heraldic grants and pedigrees (London, 1827), p. 9.

[71] Parry, *The trophies of time : English antiquarians of the seventeenth century*, p. 222.

[72] Broadway, *'No historie so meete'*, p. 49.

[73] P. D. A. Harvey, 'English Estate Maps: Their Early History and their Use as Historical Evidence', in David Buisseret (ed.), *Rural images : estate maps in the Old and New Worlds* (Chicago, 1996), pp. 27-62.

an urgent and valuable task.[74] So the destruction of monuments and other features, in addition to driving the remembrance of them, saw an effort to find an alternative way of recording a claim to land. That encouraged both cartographic examination and genealogy, though historians disagree about the ways in which genealogical research was reshaped in the process. Woolf has demonstrated a change in the character of local study, with genealogists increasingly emphasising the link between families and a famous individual from the past, for example one who had fought alongside William the Conqueror at Hastings, rather than pursuing 'a pseudo-biblical series of 'begats'.'[75] Broadway on the other hand discusses the increasing concern with recording more recent genealogical features of a family's lineage, as can be seen clearly from Gervase Holles's (1607-1675) extensive family history, written while in exile during the civil war in the hope that it would be transcribed onto vellum and treasured by future generations.[76] So the destruction of monuments and other features, in addition to driving the remembrance of them, saw an effort to find an alternative way of recording a claim to land: which encouraged both cartographic examination as discussed above, and genealogy.

So, while antiquarian pursuits were hindered by the movement of armies, the destruction of monuments and documents, and the importance of other concerns to the gentry, the Civil War also provided an added impetus to

[74] Essex Record Office, D/DU 441/96 Belchamp Otten parish accounts, 1700-1, pp. 22-23.

[75] Woolf Woolf, *The social circulation of the past*, pp. 133-137.

[76] Broadway, *'No historie so meete'*, pp. 172-174; Gervase Holles and Alfred Cecil Wood, *Memorials of the Holles family, 1493-1656* (London, 1937), p. 5.

specific forms of antiquarianism. Destruction, or even the threat of it, prompted memorial cataloguing and the collection of antiquities as well as manuscripts. Political conflict provided an impetus for philological antiquarian research. On all sides archival records were scoured for precedents and examples to use within wider arguments.[77] Military conflict provided an incentive for the provision of cartographic information 'useful for all commanders in the quartering of soldiers, and all sorts of persons, that would be informed, where the armies may be', to quote from the title page of a pocket-sized six-sheet map of the country.[78] As the wars drew to a close, the impetus for this military-inspired cartographic research dropped, though the information gathered due to it did not disappear and neither did the methodological innovations undertaken.

Despite the active oppression of royalists, for example the restrictions on Dugdale's movement and the imprisonment of other antiquarians such as William Somner (bap. 1598, d. 1669), and Sir John Oglander (1585-1655), the Interregnum proved to be a period of resurgent antiquarian activity. As the Civil War closed, local historians on opposing sides were able to resume their collaboration. Despite the exiling of royalists from public life, in some cases by force and in other cases by choice, many spent their time investigating the past 'as a tolerable alternative to the distress of the present.'[79] As one illustration of direct co-operation, royalist Dugdale wrote to the parliamentarian Sir Simonds

[77] Braddick, *God's fury, England's fire : a new history of the English civil wars*, p. 583.

[78] William Saxton, *Saxton's survey of England and Wales : with a facsimile of Saxton's wall-map of 1583*. Edited by R. A. Skelton (Amsterdam, 1974), pp. 10-15, 22.

[79] Graham Parry, *The seventeenth century : the intellectual and cultural context of English literature, 1603-1700* (London, 1989), p. 172.

D'Ewes (1602-1650): 'your discourse with me of Antiquities can afford no matter of exception to these jealous times';[80] that is to say that the restriction of movement did not on its own prevent research by correspondence. The past then, was examined in an attempt to make sense of 'the late times of civil war, and confusion'.[81]

This can be seen particularly well in the work of Henry Savage, who began a twenty-seven year collection of arms, inscriptions, and occasionally evidence from oral sources in 1650 as an attempt to prevent the loss inherent in the passage of time; the same motivation underlay Anthony Wood's collection of Church inscriptions through Oxfordshire which began in 1658. Just as making sense of the past became urgent, conditions during the Interregnum facilitated such study. Travelling once again became easier with decreasing levels of highway robbery, as well as the longer term trends of an increase in the number and quantity of inns and hostels combined with the continual improvement of horse breeds.[82] Perambulation of the countryside, then, was becoming a more enjoyable and common pastime. Partly as a result of this, and partly due to the popularity of the writings of authors such as Dugdale, more people contributed to local study in their spare time, with a particular focus on antiquities.

[80] Leicestershire CRO, DE 2191, untitled,

[81] Thomas Sprat, *(The) History of the Royal Society (of London, For the Improving of Natural Knowledge)* (London, 1667), p. 152.

[82] Kenyon, *The history men*, p. 17; Bristol Record Office, MS 36074 88, collections of Henry Savage, 1650-77; Clark (ed.), *The life and times of Anthony Wood, antiquary of Oxford 1632-1695, described by himself*, vol. 1, pp. 32-63.

John Aubrey was one of those so inspired by Dugdale's work, which he had seen in manuscript long before publication. In addition to the plates of Osney mentioned above, Aubrey kept a travel journal covering most of his journeys (nearly always along a different route) between Oxford and the family home in Wiltshire. But it was in 1656, after encouragement from a club of 'Commonwealth Men' at Oxford, including Samuel Hartlib (c. 1600-1662), that he began to systematically survey the antiquities of Wiltshire.[83] Through the rest of the Interregnum he pursued the antiquarian history of his home county strictly as a leisure activity, due to his inclination 'by my Genius from my Childhood to the Love of Antiquities'.[84] This local history of Wiltshire, as we shall see, was a project which he continued to work upon throughout his life: an early version was copied in manuscript by the Royal Society, but there were enough revisions and other information left for the appearance of two different printed editions in the nineteenth-century.[85]

William Dugdale, on the other hand, had a successful publication record through the Interregnum, which may partly have been due to the adverse effects it initially had on his personal circumstances. He was forced to compound for his estate in Oxford, and his position as herald was ended. As a result of this ill-fortune, he returned to his history of Warwickshire, while planning to print manuscripts in his possession, such as Sampson Erdeswicke's (c. 1538-1603) *View*

[83] Mendyk, '*Speculum Britanniae*', pp. 173-175.

[84] Bodleian Library, MS Top. Gen.c.24, John Aubrey, Monumenta Britannica or A Miscellanie of British Antiquities, vol. 1, f.23.

[85] Aubrey, *The Natural History of Wiltshire*; John Aubrey, Memoires of Naturall Remarques in the county of Wilts... ; Aubrey, *Wiltshire: the topographical collections*.

of Staffordshire, in the hope of generating some income for himself.[86] His scholarly credibility was cemented through his involvement with Roger Dodsworth's *Monasticon Anglicanum* (1655), a work containing mostly charters, but also some account of monastic history and details regarding both large and small church houses, abbeys, and the relationship between Church and the King. On Dodsworth's death in 1654, the historian John Rushworth (c. 1612-1690) was entrusted to complete its publication, and identifying the debt that the work owed to Dugdale's research, he included Dugdale's name on the title page.[87] Thanks to this recognition of his considerable antiquarian talents, patronage for the printing of Dugdale's own work was less difficult to come by in future.

Dugdale's famous *Antiquities of Warwickshire* was published in 1656, and as one recent commentator has suggested: 'a new standard had been set against which subsequent works would be judged.'[88] The work was influential after the Restoration in stimulating a wider audience for antiquarian discussion, but it also demonstrated the renewed identification of gentry with their counties by dedicating each map to a local gentleman.[89] In the following years, while there were no institutional positions forthcoming either in the university system or, due to Dugdale's known royalist tendencies, from the state, his work was

[86] William Hamper (ed.), *The life, diary, and correspondence of Sir William Dugdale*, pp. 72-73.

[87] Parry, *The trophies of time : English antiquarians of the seventeenth century*, pp. 227-236.

[88] Broadway, *'No historie so meete'*, pp. 50-51.

[89] Mendyk, *'Speculum Britanniae'*, p. 24; William Dugdale, *The Antiquities of Warwickshire illustrated; From Records, Leiger-Books, Manuscripts, Charters, Evidences, Tombes, and Armes: Beautified with Maps, Prospects and Portraictures* (London, 1656), pp. 1, 3, 267, 487, 637.

diverse and privately funded. Perhaps his greatest patron through the final years of the Interregnum was Geoffrey Palmer (1598-1670), who would become attorney-general after the Restoration. Palmer lived in Northamptonshire, conveniently located between Dugdale's Warwickshire research and London. Dugdale's next major project, though, was commissioned by the company draining the Great Level, the country's largest area of Fenland in Cambridgeshire, demonstrating the continuance of the link between employment regarding infrastructure and topographic interests. This company asked Dugdale to write a history of land drainage, which he undertook and completed either side of the Restoration, and published in 1662 as *History of Imbanking and Drayning*.

While he was reliant upon patrons and commissions for financial support, Dugdale's intention according to Graham Parry, 'was to get the record of the past straight, and to preserve it without prejudice'.[90] This is evidenced by his extensive printing of manuscripts which would have otherwise been vulnerable to destruction, and the ordering and cataloguing of records of the past which he came across in his research. However, this was not just recording the past for recording's sake; there was a deeper, religious and melancholic, memorial culture underlying the intention. His involvement in the *Monasticon Anglicanum* (1655), for instance, was part of a general move, sponsored by the Anglican nobility and clergy, towards reclaiming the piety of the past: the books were intended as substitutes for the eroding archaeological remains of the

[90] Parry, *The trophies of time : English antiquarians of the seventeenth century*, p. 226.

monasteries.[91] It was this aim to reclaim the past which motivated Dugdale and many other Royalist antiquarians to catalogue their local environment. Six years later Clarendon (then Chancellor) persuaded the King to make Dugdale Norroy King of Arms; by 1677 he was Garter King of Arms and knighted, rising from Herald to knight over a forty-year career primarily on the back of patronage garnered from his antiquarian work.[92] So, while his aim may have been, as Parry suggests, to record the past faithfully, he did so in clear and direct support of a Royalist cause, and as a result was hugely successful socially and financially.

Through the Interregnum, while Dugdale and fellow royalists were recording objects of significance to them, parliamentarians were also instigating locally-based research for a different reason: a desire to harness knowledge for its practical utility. In the area of agriculture the Puritan reformers, led by Samuel Hartlib (1600-62), engaged in the sharing of improvements and their effects on yields. Hartlib acted as the hub of a correspondence network involving gentry from far afield, publishing works by individuals such as Richard Weston (1591-1652), Cressy Dymock (fl. 1629-1660) and John Beale (bap. 1608, d. 1683), and sharing knowledge from his wide network of continental correspondents.[93] These men were local historians but had no or little interest in antiquities, genealogy, or the cataloguing of Church monuments. John Beale, for example, focused his considerable efforts almost entirely upon describing and recording

[91] Walsham, *The reformation of the landscape*, p. 279.

[92] Parry, *The trophies of time : English antiquarians of the seventeenth century*, pp. 217-223.

[93] Joan Thirsk, 'Agricultural Innovations and their Diffusion', in Joan Thirsk (ed.), *The Agrarian history of England and Wales* (London, 1985), pp. 522-558.

the arboriculture of Herefordshire in *Herefordshire Orchards*. As well as a descriptive survey of apple production in the county, this work also covered the uses of fruit in addition to an extensive discussion of cider manufacture, leading to Beale being given the moniker: 'Cidar man'.[94]

Ireland provides a more extensive example of the use of utilitarian natural history through the Interregnum. William Petty (1623-1687) was responsible from 1654 for undertaking the Down Survey- one of nineteen surveys of Ireland conducted during the Interregnum, as a result of which the lands forfeited by Irish 'rebels' were redistributed. These surveys, in addition to the land-based purpose, also acted to correct Gerald Boate's (1604-1650) *Natural History of Ireland* which had been written by Boate in 1645 entirely from textual sources, and was published by Hartlib in 1652. Petty's work in leading the Down Survey was important mainly due to his mobilisation of a large number of generally poorly educated men overseen by technical specialists, with the evidence then accumulated by Petty himself.[95] As will be discussed in chapter three, on his return to London in 1659 Petty brought with him a variety of methodological innovations which would impact on local research at home. This was local 'history', in that it provided detailed records of specific aspects of a series of local areas, focused upon improving agricultural productivity, funded and supported by those engaged in the commonwealth state.

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[94] Mendyk, *'Speculum Britanniae'*, p. 139. Also see Webster, *The great instauration : science, medicine and reform, 1626-1660*, pp. 479-483.

[95] Ted McCormick, *William Petty and the ambitions of political arithmetic* (Oxford, 2009), pp. 96-101.

Through the Civil War and Interregnum, then, local history continued to be undertaken. However, there was a notable shift in the sources of patronage available to those wishing to pursue local research, with a far greater stress on utility emerging during the Interregnum among parliamentarians such as Petty, while royalists such as Dugdale continued local research in a similar vein to previous studies. At the same time, the violence, destruction and dearth of crown patronage through the Civil War was, of course, detrimental to the undertaking of local research by individuals. But the way in which this destruction took place spurred the recording of the world, and therefore more than made up for its initial negative effects over the generation to come. John Aubrey is exemplary here; his concern at the potential loss of knowledge of buildings and monuments, stemming from the changes he witnessed among buildings and monuments on his journeys from Wiltshire to Oxford throughout the Civil War, provided him with an encouragement to local study which lasted throughout his lifetime.

The Restoration of Learning and the Birth of County Natural History

While utilitarian natural history continued after the Restoration in 1660, sources of patronage for local study which had been disrupted through the Interregnum re-opened, particularly those centred around the monarchy: Charles II was far more supportive of antiquarian and chorographic research than his father had

been, along with a wide range of other activity by virtuosi.[96] The support he provided was seemingly part of an effort to re-establish the extended Royal patronage networks in order to signify the value and history of monarchical rule, while consolidating his central place in the cultural as well as political sphere. This Royal support and interest resulted in John Aubrey's first commissioned research, a direct result of the surging Royalist feelings in Wiltshire in early 1660. At a meeting to decide on MPs for the Convention parliament, called to proclaim that Charles II was the lawful monarch of England, the Wiltshire gentry considered means by which their county in particular could be celebrated. 'It was wished by some that this County (wherein are many observable Antiquities) were surveyed in imitation of Mr. Dugdale's Illustration of Warwickshire'; John Aubrey, along with lawyer William Yorke and three other gentlemen assistants, were asked to begin research.[97] The work desired by these gentlemen, at this point in time and heavily inspired by the work of Dugdale in Warwickshire, was an antiquarian study. Aubrey's work over the next eleven years resulted in 'an Essay Towards the Description of the North Division of Wiltshire', which circulated in manuscript through the county; the author's own copy was lodged at the Bodleian.[98]

[96] The extended definition of virtuoso as skilled amateur with a wide range of interests, mostly non-utilitarian and pursued for joy rather than profit, given by Walter Haughton in 1942, has yet to be bettered: Walter E. Houghton, Jr., 'The English Virtuoso in the Seventeenth Century: Part I', *Journal of the History of Ideas* 3 no. 1 (1942), pp. 52-58, 'definitions'.

[97] David Tylden-Wright, *John Aubrey : a life* (London, 1991), p. 124.

[98] John Aubrey, An Essay towards the Description of the North Division of Wiltshire.

It was a chance mention of Aubrey's name at court that led to this Royalist-inspired local patronage being supplemented by a royal commission in 1663. Charles II had been talking with his Physician-in-Ordinary Walter Charleton (1620-1707) and William Viscount Brounker (1620-1684) regarding Stonehenge, when one of them shared Aubrey's opinion that Avebury 'did as much excel Stonehenge, as a Cathedral does a Parish church.'[99] Charles sent for Aubrey and the two met, along with Charleton, shortly thereafter. At this meeting Aubrey showed the King a schematic plan of Avebury he had drawn from memory, and discussed the monument and his discovery of it in 1648/9[100]. A fortnight later the King was to be on tour in Bath, and arranged to meet Aubrey so that he could be shown Avebury in person, along with the Duke of York; this visit led to the King commissioning him to write and print a description of the antiquity, and the Duke of York demanding 'an account of the Old Camps, and Barrows on the Plains.'[101] The meeting demonstrates that even royalty shared a curious cast of mind. When Charles II was leaving to meet the Queen, Aubrey records in his *Monumenta Britannica*; the King 'cast his eye on Silbury-hill about a mile off; which he had the curiosity to see, and walked up to the top of it, with the Duke of York: Dr Charleton and I attending them'. This brief encounter was not to be Aubrey's only direct employment through the Royal Court: much of his later work on Surrey was undertaken in response to a request from John Ogilby (1600-

[99] John Aubrey, Monumenta Britannica or A Miscellanie of British Antiquities, vol. 1, f. 23.

[100] Anthony Powell, *John Aubrey and his friends* (New York, 1948), pp. 59-64.

[101] John Aubrey, Monumenta Britannica or A Miscellanie of British Antiquities, vol. 1, f. 24.

1676), royal cosmographer who was compiling a 'Geographical and Historical description of England and Wales.'[102]

Employment through royalty and patronage networks was vital to Aubrey's ability to pursue his interests - it was this support that enabled him to make a living for the latter half of his life. Following the death of his father in 1652 Aubrey had been lumbered with a series of complicated lawsuits regarding £1800 of debts, which first ate into his large estates and eventually left him effectively penniless- by 1671 he had disposed of his entire inheritance, and by 1677 he was forced to sell his most prized possession, his books.[103] It appears that his patrons were more interested in the research itself and the enjoyment of Aubrey's company than in the publication of any finished work, given that only *Miscellanies*, an investigation of various supernatural phenomena, was printed in his lifetime.[104] Much of his work, including his county natural history focused on Wiltshire, was half-finished and deposited at the Ashmolean in manuscript form. Even his work on Avebury and Surrey was left unfinished in the Bodleian, although in the case of Surrey the editing required for publication was relatively minor, and completed by 1719 by Richard Rawlinson (1690-1755).[105]

Alongside the financial aid from a broadly supportive Royal and Royalist environment, which was restored along with the monarchy after its eleven-year

[102] Powell, *John Aubrey and his friends*, p. 149.

[103] Ibid., Appendix B: 'Aubrey's Library', pp. 295-310.

[104] John Aubrey, *Miscellanies upon the following subjects collected by J. Aubrey, Esq*. (London, 1696).

[105] John Aubrey, *The Natural History and Antiquities of the County of Surrey. Begun in the year 1673...* Edited by Richard Rawlinson (London, 1718-9).

absence, both Aubrey and Plot were indebted to the encouragement, engagement and assistance given by networks of fellow naturalists and antiquarians. The nature of correspondence networks in the late-seventeenth century has long been the subject of scholarly attention.[106] These networks, I will demonstrate for county natural historians, were centred on communities constructed largely at the University of Oxford, at which all of the county natural historians studied. While the curriculum undertaken by undergraduates was still, as it had been half a century earlier, in no way conducive to local historical research, meeting like-minded scholars and gentlemen encouraged such research and provided access to potential patrons.

Of the county natural historians, it is Robert Plot who was the most influential figure within the community at Oxford. Born in Sutton Barne, Kent, in 1640, Plot had been educated at a free school in Wye before entering Magdalen Hall in Oxford in 1658, where he would spend the next thirteen years of his life. After six years' formal study he began teaching while preparing for BCL and DCL degrees; it was during the next seven years that he learnt the skills which would serve him so well as a local historian. He followed a course in chemistry, learnt basic land-surveying, and was heavily involved in natural philosophical discussions as part of a group centred around Robert Boyle (1627-1691).

[106] Hall, 'The Royal Society's Role in the Diffusion of Information in the Seventeenth Century', pp. 175-176; Jonathan Goldberg, *Writing matter : from the hands of the English Renaissance* (Stanford, 1990); Alan Stewart and Heather Wolfe (eds.), *Letterwriting in Renaissance England* (Washington, D.C., 2004); Gary Schneider, *The culture of epistolarity : vernacular letters and letter writing in early modern England, 1500-1700* (Newark, 2005); Susan E. Whyman, *The pen and the people : English letter writers 1660-1800* (Oxford, 2009).

However, it was a continuing relationship with his tutor, Josiah Pullen (1631-1714), which was perhaps most influential. Following a long tradition at Magdalen Hall, Pullen was closely interested in both antiquarian and geographical (specifically chorographic) research;[107] Plot, heavily influenced by Pullen and other scholars, devised a plan to write a descriptive survey of England.

It was after achieving BCL and DCL in 1671 that Plot began to utilise the networks he had spent time developing through the previous seven years. In 1673 he appealed to prospective patrons by calling upon the work of Leland and Camden, suggesting that he would 'reassume their labours… provided I be judged a fit person, the design agreeable, and the encouragement proportionable'. Following in Leland's footsteps in particular, Plot included in his proposals extensive discussion of the collection of pre-Dissolution manuscripts which were 'lost to the World, lying secretly in Corners and private Hands', either for relinquishing to the Bodleian Library or transcription.[108] After two years spent developing specific plans and soliciting patronage, Plot was able to begin travelling through Oxfordshire in June 1674 with a testimonial signed by the principal dignitaries of Oxford stating that they 'do approve of that his ingenious undertaking and do recommend him to the Courteous furtherance of such persons whom he shall have occasion to make enquiry in the procedure of that

[107] H. E. D. Blakiston, 'Pullen, Josiah (1631–1714)', *Oxford Dictionary of National Biography*, 2004. <http://www.oxforddnb.com/view/article/22876> (10-01-2010).

[108] Dr. Plot to the Reverend Dr. John Fell, c. 1673, in R. T. Gunther (ed.), *Early science in Oxford. Vol. 12, Dr. Plot and the Correspondence of the Philosophical Society of Oxford* (Oxford, 1939), p. 337.

Affair.'[109] The result, published just three years later by Oxford University Press, was the *Natural History of Oxfordshire*. Its success is shown most clearly by the suggestion that a special lectureship in 'philosophical natural history' should be created for Plot, but is also seen in his increased standing amongst both peers and later English natural historians.

In the later 1670s Plot began research into what would become his second county natural history, visiting Staffordshire at the invitation of Walter Chetwynd (1633-1693) of Ingestre and beginning a project to survey the county through the encouragement of 'Right Honourable the Virtuous and most accomplished Lady, Jane Lady Gerard Baroness Gerard of Gerards Bromley, the first actual encourager of this design.'[110] He issued a set of queries to the gentry of the county in 1679, and toured Staffordshire in the summer of the following year with Chetwynd's financial support and occasional company, intending to complete the work in short order. Due to a combination of other duties and his desire to continue research by re-visiting the area on several occasions over five years, the work was not completed and published until 1686, much to the irritation of his correspondent Charles King.[111] One of the most interesting features of this work is the map, which harks back to Norden in its attention to

[109] Oxford testimonial to Dr. Plot, in ibid., pp. 345-346.

[110] S. A. H. Burne, 'Early Staffordshire Maps', *Transactions of the North Staffordshire Field Club* 54 (1920), p. 70. Quote from Robert Plot, *The natural history of Stafford-shire* (Oxford, 1686), p. 61.

[111] Charles King to Dr. Robert Plot, March 26 1684, in Gunther (ed.), *Early science in Oxford. Vol. 12, Dr. Plot and the Correspondence of the Philosophical Society of Oxford*, pp. 345-346. Charles King (dates unknown) was the chaplain and amanuensis of Walter Chetwynd, a Staffordshire gentleman- see M. W. Greenslade, *The Staffordshire historians* (Stafford, 1982), pp. 41-49.

detail, the standardisation of the signs used to indicate objects, and indeed using an alphanumeric system with a key to indicate where to find the gentry of the county. In an innovation of his own he also indicates the degrees and minutes of latitude in the margin of the work.[112]

In 1679 Plot had taken on the curatorship of the natural and antiquarian objects gifted to Oxford university by Elias Ashmole (1617-1692), and when the Ashmolean museum opened to the public in 1683, Plot was the first 'Custos', as well as Professor in Chemistry at the University.[113] While researching *The Natural History of Staffordshire*, Plot brought hundreds of objects back to the Ashmolean, mentioning several of them in the printed work with the evident intention that the curious could visit the museum and see them first-hand. As will be discussed at length in Chapter Three, the collections at the Ashmolean themselves also proved useful for his studies, for instance by providing comparative evidence to confirm the fact that stone axes were man-made. Plot was by no means the only county natural historian to add objects to the Ashmolean's growing collection- John Morton would later add near two thousand, and Aubrey himself felt that the Ashmolean was the best place to lodge his collections to ensure they would never be 'cast away as Rubbish.'[114]

[112] Plot, *Of Staffordshire*, sig. A4-5.

[113] Arthur MacGregor, 'The Ashmolean as a museum of natural history, 1683-1860', *Journal of the History of Collections* 13 no. 2 (2001), p. 130; Swann, *Curiosities and Texts*, pp. 50-54. Also see Ovenell, *The Ashmolean Museum, 1683-1894*.

[114] Bodleian Library, MS Wood F 51- Letters to Wood, John Aubrey to Anthony Wood, 23 January 1693/4, f. 8.

With both the Bodleian and the Ashmolean, Oxford became in many ways the central intellectual node for the county natural historians.

The centrality of Oxford to the networks of county natural history was a marked change from earlier periods: in Elizabethan England, it had been royal networks centred on London which were most prominent; in Jacobean and Caroline England it was provincial networks such as those centred around William Burton. But alongside these marked changes there were many underlying continuities. Aubrey's work on Wiltshire had been solicited by gentlemen keen on preserving and glorifying their county, and his later work largely supported by Royal and Royalist patronage: provincial, in that it originated from Wiltshire, but Royalist nonetheless. It was through this patronage that he was able to overcome the significant financial difficulties he encountered while maintaining a prodigious level of academic research and interest. Plot's early work similarly successfully appealed to a sense of county pride among a small group of the leading gentry of Oxfordshire. This is entirely reminiscent of earlier work by Leland, Camden and others as discussed previously. Likewise, while the nodes of the correspondence networks had shifted from London's Inns of Court to Oxford's Bodleian Library and Ashmolean Museum, it was still correspondence and personal contact which spread the enthusiasm for local study.

The importance of the Ashmolean is testament to the central role for the county natural historians of collecting objects, which was central to the development of county natural histories. Collecting objects was justified by the

new natural philosophy, to be discussed in detail through Chapter Three, which was strongly based on the ideas of Francis Bacon. Bacon's method of investigating nature is often presented as a, if not the, key development of the Scientific Revolution: the writer should describe nature to allow the reader to see a general theory through the lens of a specific event or series thereof.[115] Supplanting the Aristotelian method of seeking out examples of already-known truths, the belief that specific instances, as long as they met the criteria for verification, could be generalised, forms the central tenent of the narrative of the Scientific Revolution, and gives obvious importance to the collection of a wide variety of information about the natural world. [116]

Collected "samples" of nature, whether stored in the Ashmolean museum, cultivated gardens, or private cabinets, were vital to the research of many naturalists in latter seventeenth century England. The library still acted as an important focus, but books were, as Chapters Two and Three will show, given less authority than had previously been the case. "Field naturalists", which is a loose term encompassing many scholars working in disciplines we might now know as botany, geology, geography, and chemistry, felt that their proximity to the phenomena they were describing validated their work, and claimed to find things which could not be seen in the books of the ancients. The collections and gardens which resulted from the work of naturalists, and more widely the

[115] Dear, *Revolutionizing the sciences*, p. 139.

[116] Swann, *Curiosities and Texts*, pp. 55-62; Friedrich Steinle, 'From Principles to Regularities: Tracing 'Laws of Nature' in Early Modern France and England', in L. Daston and Michael Stolleis (eds), *Natural Law and Laws of Nature in Early Modern Europe: Jurisprudence, Theology, Moral and Natural Philosophy* (Surrey, 2008), pp. 229-231.

natural world itself, became the primary sources of authority and interest in natural history, as well as in the New Science.[117] Bacon himself had explicitly described what he saw as worthy of collection within a 'cabinet of curiosities':

> whatsoever the hand of man by exquisite art or engine has made rare in stuff, form or motion; whatsoever singularity, chance, and the shuffle of things hath produced; whatsoever Nature has wrought in things that want life and may be kept.[118]

The primary change in the socio-cultural position of local historians was the institution of the Royal Society, which is taken to represent the fulcrum of the 'new' natural philosophy, and closely focused around the collection and collation of 'matters of fact' as Bacon suggested. There had been several efforts during the Interregnum to organise intellectual life in an institutional manner, such as Samuel Hartlib's Office of Address or William Rand's (fl. 1650-1660) College of Graduate Physicians, and bodies like the Council of Trade and Plantations.[119] None of these were able to garner enough support to become permanent, perhaps because of the turbulent times in which they were founded. Whether encouraged by the apparent stability of Restoration England or driven by a fear of the return to earlier instability, the group of individuals who formed the Royal Society were able to overcome these hurdles. This group had been

[117] Ogilvie, *The science of describing*, pp. 261-263.

[118] Swann, *Curiosities and Texts*, p. 2. cites Francis Bacon, *Gesta Grayorum*, in Heath, Spedding, and Ellis (eds.), *The works of Francis Bacon*, vol. 8, p. 335.

[119] Michael Hunter, *Establishing the new science : the experience of the early Royal Society* (Woodbridge, 1989), pp. 6, 32; Steven Shapin, 'The House of Experiment in Seventeenth-Century England', *ISIS* 79 no. 3 (1988), p. 373.

meeting and corresponding for at least fifteen years before its official inception as a society in 1660; two years later it was named 'The Royal Society' in the Royal Charter permitting the group to publish, and a second charter a year later gave it the name which it retains today: 'The Royal Society of London for Promoting Natural Knowledge'.

The Royal Society was the first public body dedicated to the ideal of cooperative research, although nearly all of the work that was done was individual in nature. These individuals shared the collectors' view of the world, which from the 1660s increasingly encouraged the investigation of nature and natural phenomena alongside antiquities, the main link being a methodology of research which can be loosely labelled empirical. Rather than reporting how the world behaves in general, Royal Society members were primarily interested in singular events, that is, interesting objects or phenomena which could be discussed, and in experiments which could be repeated at meetings.[120] This was particularly suited to the post-Restoration climate of discussion, as it allowed the Society to avoid political and religious conflict which was inherent in much philosophical discourse of the time. By standing apart from political issues, the Society was able to become a forum for cross-party socialising, though at the same time those with extreme points of view were, in matter of fact, largely unwelcome.[121] There have been several efforts to tie the Society to a particular religious group, and over the course of the past fifty years historians have made

[120] Dear, 'Totius in verba : rhetoric and authority in the early Royal Society', pp. 146-152; Hunter, *Establishing the new science*, p. 1.

[121] Hunter, *Establishing the new science*, p. 12.

reasonable arguments for the society having distinct Puritan, Latitudinarian and Anglican links, an indication of the religious diversity which more recent historians have recognized.[122]

There was a studiously maintained avoidance of traditional philosophizing about the real cause of things, as well as theology, given that both issues were thought to be too political for inclusion. So when discussing the operation of the natural world, the focus was on the *how* rather than the *why*. This limitation, if that is an appropriate word, of the types of knowledge which could be discussed, as well as the protocols of argumentation and evidence with which it came, was what allowed the Royal Society's members to negotiate and debate competing claims (be they observational or conjectural) within a polite gentlemanly environment.[123] The etiquette of discussion was itself a matter of concern, and it was decided by the Society that the methods of discussion which held sway in universities based around the study and memorization of texts, was not the correct one for science, hence the society's motto, "nullius in verba" (nothing in words), and its commitment to settle matters 'by the authority of experiments', both expressed in the Second Charter.[124] *Philosophical*

[122] B. J. Shapiro, 'Latitudinarianism and Science in Seventeenth-Century England', *Past and Present* no. 40 (1968); Quentin Skinner, 'Thomas Hobbes and the Nature of the Early Royal Society', *Historical Journal* 12 no. 2 (1969); J. R. Jacob, 'Restoration, Reformation, and the Origins of the Royal Society', *History of Science* 13 no. 3 (1975).

[123] Steven Shapin and Simon Schaffer, *Leviathan and the air-pump : Hobbes, Boyle, and the experimental life* (Princeton, 1985), pp. 25, 146-147; Mario Biagioli, 'Etiquette, Interdependence, and Sociability in Seventeenth-Century Science', *Critical Inquiry* 22 no. 2 (1996), p. 202.

[124] Biagioli, 'Etiquette, Interdependence, and Sociability in Seventeenth-Century Science', p. 235; Harold Hartley, 'The Tercentenary of the Royal Society's Charter', *Notes and Records of the Royal Society of London* 17 no. 2 (1962), p. 116.

Transactions, the brainchild of Henry Oldenburg (c. 1619-1677) and with the consent of the Royal Society, propagated the increasingly open method of communication which the Society aimed to present.[125]

During the early years of the *Philosophical Transactions*, the county natural historians Aubrey, Plot, Morton and Leigh alone covered topics as diverse as medicated springs, incombustible cloth, electrical bodies, digestion, epileptic fits, shells found under a moor in Northamptonshire, and the effect of the great frost in 1683 on trees and plants.[126] However, in addition to these naturalistic topics the antiquarian research undertaken by county natural historians was also of interest to the Royal Society fellows. To give one example, which we have already come across, Aubrey's schematic drawing of Avebury, prepared for

[125] Hunter, *Establishing the new science*, p. 27; Shapin and Schaffer, *Leviathan and the air-pump*, pp. 18-25.

[126] Charles Leigh, 'A Discourse Concerning Digestion in a Letter to the Publisher from Mr. Charles Leigh of Brasen-Nose Colledge Oxford', *Philosophical Transactions* 14 (1684); Robert Plot and Jacob Bobart, 'A Discourse Concerning the Effects of the Great Frost, on Trees and Other Plants Anno 1683. Drawn from the Answers to Some Queries Sent into Divers Countries by Dr. Rob. Plot S. R. S. and from Several Observations Made at Oxford, by the Skilful Botanist Mr. Jacob Bobart', *Philosophical Transactions* 14 (1684); Robert Plot, 'A Discourse concerning the Incombustible Cloth above Mentioned; Address't in a Letter to Mr. Arthur Bayly Merchant, and Fellow of the R. Society; and to Mr. Nicholas Waite, Merchant of London', *Philosophical Transactions* 15 (1685); Mr Aubry, 'Part of a Letter from Mr. Aubry, F. R. S. Dated Feb 24. 1695/6. to Sir John Hoskyns, V. P. of the R. S. concerning a Medicated Spring in Glamorganshire', *Philosophical Transactions* 19 (1695); Robert Plot, 'A Catalogue of Electrical Bodies. By the Late Dr. Rob. Plot, F. R. S', *Philosophical Transactions* 20 (1698); Charles Leigh, 'Part of a Letter from Dr. Charles Leigh of Lancashire to the Publisher, Giving an Account of Strange Epileptick Fits', *Philosophical Transactions* 23 (1702); John Morton, 'A Letter from the Reverend Mr Morton, A. M. and S. R. S. to Dr Hans Sloane, S. R. Secr. Containing a Relation of River and Other Shells Digg'd up, together with Various Vegetable Bodies, in a Bituminous Marshy Earth, Near Mears-Ashby in Northamptonshire: With Some Reflections Thereupon: As Also an Account of the Progress He Has Made in the Natural History of Northamptonshire', *Philosophical Transactions* 25 (1706).

Charles II, was later presented by Walter Charleton to the Royal Society at a meeting on July 8th 1663, and the plan remains in the Royal Society archives.[127]

Robert Plot, too, was very closely involved with the Royal Society, acting as second secretary from November 1682 to November 1684, during which time he also edited *Philosophical Transactions*, as well as authoring several articles published within. It is this association with the Royal Society which had led historians to present Plot's work, alongside Thomas Browne's, as marking a new course of local study.[128] Whether or not this was an accurate reflection of the conception and content of Plot's county natural histories will be discussed in later chapters, but Plot was certainly closely involved in the forms of sociability which came alongside the new natural philosophy, and interested in the 'new' science. He was, for instance, the founder of chemistry at Oxford when appointed to an *ad hominem* chair of Chemistry in 1683, lecturing from a basement room in the Ashmolean building.[129] He also acted as the link between the Royal Society and the Philosophical Society of Oxford, which he had helped found in 1683-4 and for which he directed experiments over the following four years; and was an active correspondence with a philosophical society in

[127] Thomas Birch, *The history of the Royal Society of London for improving of natural knowledge from its first rise. In which The most considerable of those Papers communicated to the Society, which have hitherto not been published, are inserted in their proper order, as a Supplement to the Philosophical Transactions.* (London, 1756-7), vol. 1, p. 272. the plan is now at Royal Society, MS 131, John Aubrey, plan of Avebury, f. 67.

[128] Michael Hunter, *Science and the Shape of Orthodoxy: Intellectual Change in Late Seventeenth-Century Britain* (Woodbridge, 1995), p. 172; Mendyk, *'Speculum Britanniae'*, pp. 112-113; Vine, *In defiance of time*, p. 202.

[129] R. T. Gunther (ed.), *Early science in Oxford. Vol. 1, Chemistry, mathematics, physics and surveying* (Oxford, 1923), pp. 43-51.

Dublin.[130] Plot, then, proved for a time to be a central node in the connections between the Royal Society and at least two 'provincial' (if Oxford can be termed such) groups.

The next generation of county natural historians were less central to the Royal Society. Charles Leigh (1662-c.1701) was elected a Fellow in 1685 and had a few letters, primarily but not exclusively on medical matters, published in *Philosophical Transactions*, though due to the distance from his home to London he rarely attended. Similarly, John Morton was a fellow of the Society but largely a provincial correspondent rather than a regular attendee. Indeed, it was provincial patronage that seemed to count for more, and the importance of this can even be seen in Plot's own career. As he became better known among the educated gentry he also developed a strong relationship with specific patrons, such as Henry Howard, seventh duke of Norfolk. By the mid 1680s Plot was beginning to accrue administrative posts through these networks alongside assistance with his research. He became registrar to the Court of Chivalry in 1687, appointed by Howard, and the Archbishop of Canterbury made him a notary public in the same year.

This tradition of patronage relationships centred around wide-ranging encyclopaedic and observational study, which can be traced back to Camden and other topographers, developed, as I have shown, within a changing memorial culture and habits of gentlemanly sociability. Thanks to the interest of patrons in

[130] See the correspondence of the Philosophical Society of Oxford in Gunther (ed.), *Early science in Oxford. Vol. 12, Dr. Plot and the Correspondence of the Philosophical Society of Oxford*, pp. 13-332.

the past and present state of their localities, some local historians, like Plot, were able to gain social advancement through their study, or at least the subsistence Aubrey managed later in his life. However, in every case I have come across, the primary motivating force which caused an individual to *begin* research was simple curiosity. Wide-ranging and passionately pursued interest was not atypical among early modern scholars, particularly those undertaking research within patronage networks rather than the traditional university environment. While individual patrons may have preferred antiquarian work, as in the case of the gentlemen who invited Aubrey to work in Wiltshire, others were interested in the natural world, or commercial exploitation of resources, or family history.[131] There was room within the patronage structure for scholars to pursue a wide range of research, of which local history was but one variant.

Post-Revolution County Natural History

Patronage networks, as our discussion of the Civil War and Interregnum has shown, were vulnerable to political and religious shifts, as the later career of Robert Plot illustrates. Plot had been establishmentarian through his life, dedicating both of his published natural histories to the Monarch (Charles II and James II respectively) and being involved in a long-standing patronage relationship with Henry Howard, seventh duke of Norfolk. As such, the Revolution of 1688 and changing regime posed a problem for Plot. He was markedly less successful at garnering patronage under the new Williamite

[131] A similar point regarding the variety of patronage networks is made in Shapin, *The scientific revolution*, p. 90.

regime, and increasingly withdrew from public roles. Between 1689 and 1691 Plot relinquished his position as chair of chemistry, as well as his position at the Ashmolean, and contributed less often to the Royal Society. Following this, he moved to Kent, living the life of a country gentleman. He continued to pursue antiquarian and natural historical interests, compiling information for histories of Middlesex, London and Kent, but showed no intention to publish them. Neither were they undertaken on the same scale, with much less consultation with local gentry and much shorter information-gathering trips. The only afterlife of the work was the inclusion of passages in the two-volume folio translated edition of Camden's *Britannia* prepared by Edmund Gibson in 1695.[132]

Among those with local natural historical interests it was Nathaniel Johnston (1629-1705) who was most heavily affected by the Revolution, because of his Jacobite views. Johnston had gained his MA in 1654 at Cambridge and graduated MD from King's College in 1656, before moving back to the county of his upbringing, Yorkshire, where he practised medicine and followed antiquarian pursuits for the next thirty years. Johnston's antiquarian works were never completed, but his research on Yorkshire was extensive and used by Ralph Thoresby (1658-1720) in his *Ducatus Leodiensis; or the Topography of the antient and populous Town and Parish of Leedes and parts adjacent in the West Riding of the County of York* (1715). There are still over a hundred volumes of Johnston's notebooks, covering antiquities and the families of many parishes throughout

[132] Gibson, *Camden's Britannia*.

Yorkshire as well as the history of the Earls of Shrewsbury.[133] He moved to London in 1686, and swiftly became well-known for his staunch royalist views, and particularly his *The Excellency of Monarchical Government*, published in 1686 and dedicated to James II. This, coming just two years before William replaced James as King in the Revolution, was a case of spectacularly bad timing. By 1693 Johnston was receiving charitable gifts in return for writing political newsletters to the Earl of Huntingdon.

Post-Restoration, in general, county natural history became an activity more explicitly undertaken by individual virtuosos, with less support from central patronage networks or major gentry figures. While Aubrey and Plot had been intimately involved in the central networks of their day, and in particular the Royal Society, the later county natural historians such as Morton, Leigh and Robinson were very much individual scholars whose connections with the Royal Society were tangential to their main research. Likewise, while Aubrey and Plot had been able to rely on individual patrons, processes of soliciting subscriptions from a larger number of the local gentry were essential to Charles Leigh and John Morton. In the case of Thomas Robinson (d. 1719), there was not even that support. Robinson's research was entirely self-funded and undertaken in the course of a working life as both a rector and a mining entrepreneur.

[133] Many of these notebooks are now available for historians in several archives across the country. The majority are at the Sheffield Archives (NRA 4883), at the West Yorkshire Archive Service (Bacon Frank MSS), the Yorkshire Archaeological Society (MS 552), and the Bodleian (MSS Dodsw 3, 10, 12, 16-7, 71; NRA 18985 Johnston)

Robinson was also the only one of the county natural historians to have no direct relationship with either Oxford University or the Royal Society. He studied at Cambridge, graduating BA in 1668 and immediately entering the priesthood, being appointed to the rectory of Ousby in Cumberland in 1672. Most of the evidence regarding his life and activities comes from the diaries of Bishop William Nicholson whom Robinson frequently visited, and who lent Robinson works on geology and natural philosophy. Robinson's nickname, 'Parson Robinson', is derived from a combination of his position as a rector and the perceived backwardness of his ideas- particularly the support for the notion of an active providence controlling nature for the benefit of mankind, which is put forward both in the *Theological Paraphrase* and another work, *New Observations on the Natural History of This World of Matter and This World of Life* (1696). As well as being rector of Ousby, Robinson was involved in mining, attempting to re-open the Newlands mines near Keswick for Charles Seymour (1662-1748), sixth Duke of Somerset, from 1693-1703, without success due to his failure to refine copper. The debts incurred as a result of this were not cleared, driving him to London in 1708, and into taking a tour of duty as a naval chaplain in 1709-10 which was sufficient to clear them. At the same time, he published his *An Essay towards a Natural History of Westmorland and Cumberland, to which is annexed a Vindication of the Philosophical and Theological Paraphrase of the Mosaick System of the Creation* (1709).[134]

[134] Douglas Grant, 'The sixth Duke of Somerset, Thomas Robinson and the Newlands mines', *Transactions of the Cumberland & Westmorland Antiquariuan & Archaeological Society* 85 (1985).

Charles Leigh was educated at Oxford from where he graduated BA in 1683, around which time he attended some of Robert Plot's lectures, which made enough of an impression to be mentioned in a letter to William Musgrave (1655-1721), and became involved in the Oxford Philosophical Society. After moving to Lancashire in 1684, he was a semi-regular correspondent of the Philosophical Society over the following two years,[135] and in 1685 was elected to the Royal Society on the promise that he would 'to the Utmost of my Capacity give you an account of the Natural Curiosities here'.[136] He set himself up explicitly as a provincial virtuoso, and as his research developed he solicited subscriptions from the gentry of the North-West. By 1700 he had published *The natural history of Lancashire, Cheshire, and the Peak in Derbyshire; with an account of the British, Phoenic, Armenian, Gr. And Rom. Antiquities found in those parts*. Leigh had thought that his natural history, published in English and compiled utilising the patronage of local gentry, was following the trend in county natural history. However, it contained far more translation from previous Latin texts than previous county natural histories, and his work was, as a result, not well received among fellow local historians, who felt that observations should be the mainstay of new natural historical work. This criticism irked Leigh

[135] R. T. Gunther (ed.), *Early science in Oxford. Vol. 4, The Philosophical Society* (Oxford, 1925), pp. 103, 112, 122, 126, 155, 179.

[136] Hunter, *Establishing the new science*, p. 115.

to the extent that he told Thomas Hearne (1678-1735) that he had collected further material but decided against publication.[137]

Leigh was not the only individual with local historical interests who was either dissuaded from or unable to publish research. Aubrey, for instance, did not complete any of his local historical works to a standard he considered worthy of printing, and Plot also left much in manuscript. However John Browne[138] is perhaps the best example of this reluctance to venture into print. In 1697, after conducting extensive research, he published a pamphlet entitled *Proposals by way of a contribution for writing a natural history of Yorkshire*, outlining the research he had already completed alongside his plans for the future and the funding he required. In this pamphlet was a list of six locations in London and York from which financial contributions would be welcomed, alongside a promise that 'their Money shall be returned to them again, if the undertaking be not finished within two years'.[139] It seems the endeavour was unsuccessful as Browne's work has not come down to us, and nor was it mentioned in Rawlinson's 1720 *The English Topographer: Or, an Historical Account… of All the Pieces That Have Been Written Relating to the Antiquities, Natural History, or Topographical Description of Any Part of England*. I have not yet encountered evidence either way as to whether any subscriptions were collected or returned.

[137] Oct. 30 (Tu.) in Thomas Hearne, *Remarks and Collections of Thomas Hearne*. Edited by C. E. Doble (Oxford, 1885), p. 60.

[138] Dates unknown.

[139] John Browne, *Proposals by way of a contribution for writing a natural history of Yorkshire* (London, 1697), p. 2.

On the other hand, John Morton, like Leigh before him, was able to successfully find a substantial number of subscribers to fund the latter stages of his research into the *Natural History of Northamptonshire*, and to keep them happy despite repeatedly running past the planned date of publication.[140] Born in Whitton in Lincolnshire, and inspired to a love of fossils in particular by their abundance nearby, Morton studied at both Cambridge and Oxford, from where he graduated MA in 1695. Following this he was, for a brief spell, Vicar of Weston in Lincolnshire, before he took up his a position as Curate of Great Oxendon in Northamptonshire, in which he was to remain for the rest of his life. After extensive research carried out as a personal endeavour, in 1704 Morton began the formal process of soliciting subscriptions for his natural history of Northamptonshire, which he envisaged as one of many which would contribute to a national project. He called on Plot as his exemplar, suggesting that 'such an Undertaking is not like to be unacceptable in any other part of England.'[141] He put his success in garnering support down to the wide range of local gentlemen with whom he had contact over the following years, as can be seen by his response to Edward Lhwyd's suggestion that he broaden his horizons to produce the natural history of another county. He told Lhwyd that he had been 'a Searcher after Nature [in Northamptonshire] already many years, and the Gentlemen of the County are pleased to Naturalize me. The field is sufficiently

[140] Morton, *of Northampton-shire*.

[141] Bodleian Library, MS Ashmole 1820, John Morton, Proposals for subscription to the natural history of Northamptonshire, f. 79.

rich and large in that extent I take it. In one Word, one county is enough for me.'[142]

It was Lhwyd who encouraged Morton, in 1698, to produce a county natural history, demonstrating the continued importance of correspondence networks in this endeavour. Lhwyd was central to the correspondence between local naturalists around the turn of the eighteenth century, encouraging several men whose research was never completed, as well as Morton and Robinson, who both finished county natural histories.[143] In the case of Morton, while he was not a central member of the Royal Society in the way that Plot had been, he was a very regular correspondent with Sir Hans Sloane (1660-1753), then secretary of the Royal Society and editor of *Philosophical Transactions*, on botanical matters, some of which were printed in the journal.[144] This correspondence, in addition to encouraging Morton to collect and donate over a thousand items to what would become the Sloane collections, also led to a life-long friendship, ending when Sloane paid for Morton's funeral monument.

[142] Ashmole MS 1816 f. 442, cited in Frank Emery, 'English Regional Studies from Aubrey to Defoe', *Geographical Journal* 124 no. 3 (1958), p. 322.

[143] See e.g. Gunther (ed.), *Early science in Oxford. Vol. 14, Life and letters of Edward Lhwyd*, pp. 268-269. And Bodleian Library, MS Eng Hist. c. 11 1816, Letters to Lhwyd, ff. 21, 22, 50.

[144] Morton, 'A Letter from the Reverend Mr Morton, A. M. and S. R. S. to Dr Hans Sloane, S. R. Secr. Containing a Relation of River and Other Shells Digg'd up, together with Various Vegetable Bodies, in a Bituminous Marshy Earth, Near Mears-Ashby in Northamptonshire: With Some Reflections Thereupon: As Also an Account of the Progress He Has Made in the Natural History of Northamptonshire'.

Conclusions- Change and Continuity

Correspondence was central in the encouragement and completion of county history throughout the seventeenth century.[145] But the networks in which it took place had changed significantly, which, I argue, was one of the main reasons for the increasingly naturalistic focus of local study and the consequent emergence of the county natural history. As compared with Tudor and Early Stuart local history, the Interregnum had given a strong utilitarian focus to local topographies which, while discarded entirely by county natural historians, encouraged the methodologies of surveying, measuring and observing the natural world. After the Restoration, the emergence of the Royal Society provided a fulcrum for the discussion of local natural history from throughout the country, as well as a node around which correspondence networks would turn. Throughout this time, Oxford University also provided a key meeting ground for future local historians, not in its formal curriculum but in informal societies, such as the many in which Aubrey was involved through the 1640s and 1650s, and the Oxford Philosophical Society, in which Plot was instrumental through the 1680s.

While the correspondence networks had changed significantly through the period the patronage networks which provided, the main avenue in which to gain financial support to pursue their interests changed little between Camden's time and that of the first generation of county natural historians: Plot and Aubrey were as reliant upon significant individual patrons as their predecessors

[145] On correspondence in general see Whyman, *The pen and the people : English letter writers 1660-1800*.

had been. However, from the 1688 Revolution onwards it seems that significant patrons were more reluctant to invest themselves in local natural history, and for Morton, Leigh, and most other aspiring local historians, the process of gathering a long list of subscribers from the gentry in the counties in which they wanted to work became necessary; that is not to mention the direct impact upon the Jacobite Johnston, who might otherwise have added a complete work upon Yorkshire to the list of successful ventures in this area.

To reflect upon the question with which I opened the chapter, what was the socio-cultural place of the 'new' antiquary, the county natural historian, in the period to 1720? There were five features of Broadway and Vine's discussion which I will briefly mention, none of which had seen a "revolutionary" change since the pre-Civil War period, though of course all developed through time. Firstly, local history remained part of a community centred around the gentry of a county. Secondly, status and family connections remained central both to the cultural values put forward in, and the interest of, local history. Thirdly, national connectors (whether the College of Arms or Royal Society) retained their role as facilitating contact between local historians, but not as venues for extensive work in the area themselves. Fourthly, the impetus given to antiquarian investigations by the dissolution of the monasteries was mirrored by the destruction during the Civil War. Fifthly, and perhaps most arguably, the humanist aim of restoration discussed by Vine was still present, but with a stronger focus on preservation of the world as it was over literal 'recovery': we will return to that in chapter four.

In sum, I argue that the changes we have seen were evolutionary, rather than in any meaningful sense revolutionary; and consequently, that this study of the county natural historians provides a useful continuation of both Broadway and Vine's work. The undoubted developments in the intellectual content of local history in this period, from antiquarianism and chorography to a wider and more sensory natural history, were not mirrored in a change in the relative social or cultural position of those who undertook local studies.

Chapter Two- "Searching into Natural Knowledge": Practices of Collection, Description, and Verification

In this chapter, a manuscript of a journey into Kent carried out by Thomas Browne and Robert Plot, along with other more complete sets of notes and printed county natural histories, will be used to investigate the manifold practices that were utilised to survey and investigate local areas. I will discuss the extensive preparation which was undertaken before trips such as the one described above, involving library research and correspondence, along with the distribution of questionnaires to locals and the recollection of personal experiences of the area. The intention uniting these practices was the production of personal, narrative accounts that would describe the objects or places under investigation and, much more rarely, offer an explanation or categorisation of phenomena which would be new or unfamiliar to the reader. These narratives were backed up with references to collected objects and illustrations commissioned from engravers, which added detail as well as authenticity to the accounts - though the focus remained on the textual detail. In the case of those works which were printed, further textual research was undertaken to add yet another level of detail to the narrative: it was only in very unusual cases that other texts were used as authoritative sources; rather, they were mainly there for comparative or illustrative purposes. In discussing these issues, the chapter builds upon two strands of historiography within the social and cultural history of science, which will now be summarised.

Firstly, recent work by cultural historians of science has demonstrated the links between methodologies of reading, collection, illustration and detailed description across a number of disciplines which had been studied separately by earlier historiography.[1] However, to date this cultural history of empiricism has not explored the similarities in the methodological changes which were taking place in both scientific and antiquarian circles. This is despite the marked similarity in the accounts given of the changes taking place in both disciplines through the seventeenth century, as well as the large number of seventeenth-century individuals who were, like Plot, both antiquarians and naturalists. To turn to antiquarianism and history first: as Levine has argued it was in the later seventeenth century that philosophical history gave way to the both the scientific study of history and a recognisably modern historical consciousness.[2] The 'philosophical historian' had been most interested in gaining a general picture of the time from official sources, while the new 'scientific historian' was, according to Levine, interested in the criticism of extant texts and the compilation of new ones utilising a far wider range of documentation. When these combined, for instance in many of the neoclassical histories of the latter seventeenth and early eighteenth centuries, we see an attempt to write a

[1] Of particular interest here: Findlen, *Possessing nature : museums, collecting, and scientific culture in early modern Italy*; Swann, *Curiosities and Texts*; Evans and Marr (eds.), *Curiosity and wonder from the Renaissance to the Enlightenment*.

[2] See for example: Levine, *Humanism and history : origins of modern English historiography*; Levine, *The autonomy of history : truth and method from Erasmus to Gibbon*.

compelling and persuasive narrative broken up by reams of transcribed documentation.[3]

These changes which took place in the study of the past can be seen to parallel the shift from humanist natural history to 'new' natural history as suggested by historians of science. As has been discussed, Francis Bacon's advice regarding the use of nature is often presented by historians of science as a, if not *the*, key development of the period: Bacon advised naturalists to describe nature in such a way as to allow the reader to see a general theory through the lens of a specific event or series thereof.[4] This belief that specific instances, as long as they met the criteria for verification, could be generalised, which slowly came to supplant the Aristotelian method of seeking out examples of general truths, forms a huge part of the narrative of the scientific revolution.[5] Bacon's influence gave obvious importance to the collection of data about the natural world, and determined the role that natural history played. While old natural history provided examples of Aristotelian and other ancient eternal truths, the new natural history provided ostensibly theory-less nuggets of information for generalisation.[6]

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[3] Philip Stephen Hicks, *Neoclassical history and English culture : from Clarendon to Hume* (Basingstoke, 1996), pp. 155-169.

[4] Dear, *Revolutionizing the sciences*, p. 139.

[5] Steinle, 'From Principles to Regularities: Tracing 'Laws of Nature' in Early Modern France and England', pp. 229-231; Swann, *Curiosities and Texts*, pp. 55-62. For the historiography of "Scientific Revolution" see introduction.

[6] This argument is made most powerfully in Poovey, *A History Of The Modern Fact*.

The critique of this view of a transition from 'old' to 'new', as defined by much history of science, is a theme which runs through the thesis as a whole. Of particular importance to this chapter is that the methodologies used by the county natural historians produced 'particulars', or grains of knowledge. These grains of knowledge were not intended for generalisation, nor to provide examples of the already-known; the grains were the *end* of county natural history in and of themselves, conjectures regarding historical events and strictly limited generalisations notwithstanding. The focus upon the particular, as the chapter will show, brought with it a consequent focus upon narrative and personal experience which holds together all of the methodologies described.

The second strand of historiography on which this chapter builds is the social history of science, which has since the 1970s demonstrated the importance of studying the links between the socio-cultural status and context of an individual, and the knowledge they were producing. Steven Shapin used the term *epistemological decorum* to describe this relationship between culture and epistemology, which clearly stems from the idea of social decorum which was so central to polite society in late seventeenth-century and early eighteenth-century England.[7] Shapin's work has demonstrated that, among seventeenth-century individuals interested in natural history, the currency of exchange was the matter of fact, an observation described without ornament, with any conjectures regarding the cause of the phenomena and underlying truths being

[7] Shapin, *A social history of truth*, p. xxix.

carefully separated out.[8] However, even when a work or a matter of fact was presented in the correct manner, social criteria were still seen as important: rank, dress, cleanliness, religion, and previous knowledge of the reporter's veracity and morality were all part of judging whether or not to believe a report.[9] The amalgamation of these criteria, Shapin argues, can be described as gentility: essentially, in order to be a respected member of the natural historical community, one had to be a gentleman.[10]

While Shapin's focus on gentlemanly conduct is still central to our current understanding of the practices of science in this period, more recent work by intellectual historians such as Richard Serjeantson and Barbara Shapiro has widened the focus of our investigations. Serjeantson and Shapiro, building upon the work of Poovey discussed in the introduction, have demonstrated the close similarity between the processes of verification utilised by late seventeenth century naturalists and those used in contemporary rhetoric and the legal system.[11] Shapiro, indeed, presses the argument further than a "similarity" in arguing that 'when naturalists turned their attention to the particulars of natural phenomena and to experiment, they adopted a method of proof based on legal

[8] Dear, 'Totius in verba : rhetoric and authority in the early Royal Society', p. 161; Shapin and Schaffer, *Leviathan and the air-pump*, p. 75.

[9] Lux and Cook, 'Closed circles or open networks?: Communicating at a distance during the scientific revolution', pp. 186-187.

[10] H. R. French, ''Ingenious & learned gentlemen' social perceptions and self-fashioning among parish elites in Essex, 1680-1740', *Social History* 25 no. 1 (2000), pp. 44-47.

[11] Also supported in Carolyn Merchant, '"The Violence of Impediments": Francis Bacon and the Origins of Experimentation', *ISIS* 99 no. 4 (2008), p. 754.

notions of credible testimony.'[12] Significantly, Shapiro's argument makes the issue of gentility far less important, as lawsuits involved two sides, both of whom were normally gentlemen, and relied on non-gentle witnesses.[13] This chapter supports the rounded conception of testimony put forward by Shapiro, demonstrating that for the county natural historians testimony from those who encountered aspects of nature in their line of work, such as miners and farmers, was highly valued.[14] The focus of the county natural historians upon methodologies of verification means that their work provides an excellent and underexploited example with which to assess mechanisms of information collection and the verification of testimony in the latter seventeenth century. This chapter will argue that these mechanisms were drawn not from the legal sphere, as argued by Shapiro, but from the antiquarian predecessors of the county natural historians.

The wider points regarding this alternative genealogy of testimony as a mechanism of verification, along with the context of the English Enlightenment, will be discussed in chapter three. This chapter largely restricts its view to the methodologies and practices employed by county natural historians. Thus, in addition to the specific contributions to historiographic conceptions outlined above, it also offers a contribution to the discussion on practices of

[12] B. J. Shapiro, 'Testimony in seventeenth-century English natural philosophy: legal origins and early development', *Studies in history and philosophy of science* 33 no. 2 (2002), p. 259.

[13] B. J. Shapiro, *A Culture of Fact: England, 1550-1720* (Cornell, 2000).

[14] On testimony from miners, see: Cesare Pastorino, 'The Mine and the Furnace: Francis Bacon, Thomas Russell, and Early Stuart Mining Culture', *Early Science and Medicine* 14 (2009), pp. 630-660.

'commonplacing', suggesting antiquarian natural history as another discipline which should be included under this wide-ranging historical enquiry.[15] Given the immense overlap between antiquarian research and the 'new science' of the Royal Society, as demonstrated by the county natural historians but by no means limited to them,[16] this is an important contribution to our understanding of the wider nature of methodologies applied in a wide variety of topical areas in the latter seventeenth century. In particular the chapter will use the narrative of a journey into Kent carried out by Thomas Browne and Robert Plot, which is recorded in a small octavo manuscript volume in the British Library Sloane Collections, written by Browne in Canterbury a couple of days after the trip in a fair copy.[17] He followed the common convention of writing on one side of the paper, leaving the other blank for corrections and additions, both by himself and subsequent readers as time progressed.[18] Presumably, he wrote this through the compilation of details from "rough" notebooks carried on the trip itself, though as far as I have been able to determine those notebooks have not come down to us. The narrative of the trip was bound together with nine pages of notes written

[15] On practices of commonplacing see: Ann Blair, 'Reading Strategies for Coping with Information Overload ca. 1550-1700', *Journal for the History of Ideas* 64 no. 1 (2003), pp. 11-28; Richard Yeo, 'A Solution to the Multitude of Books: Ephraim Chambers's *Cyclopaedia* (1728) as "the Best Book in the Universe"', *Journal of the History of Ideas* 64 no. 1 (2003), pp. 61-72; Richard Yeo, 'Notebooks as memory aids: Precepts and practices in early modern England', *Memory Studies* 1 no. 1 (2008), pp. 115-136.

[16] For other examples see C.A. Hanson, *The English Virtuoso: Art, Medicine, and Antiquarianism in the Age of Empiricism* (2009).

[17] British Library, MS Sloane 1899, Thomas Browne, Account of a tour through Kent with Robert Plot, August 28th 1693

[18] Ann Blair, 'Humanist Methods in Natural Philosophy: The Commonplace Book', *Journal of the History of Ideas* 53 no. 4 (1992), pp. 542-543.

over the previous eight years by two local gentlemen, Edward Long and Thomas Hill. I would speculate that they were included in the binding, given their relevance, to ensure that they were not lost to posterity or for consultation later should Plot or Browne wish to use the manuscript account in a later publication. Both the gravestones transcribed from a local church (by Long) and the history of a castle that was destroyed by an earthquake in 1589 (described by Hill) were mentioned in Browne's account, but interestingly the appended notes are not referred to explicitly.

The depth of the narrative of the journey itself varies immensely. For the first three days it is possible to completely reconstruct the journey, while after that the narrative breaks down; specific parts of the journey are recounted in detail, though the focus has switched to itemising and describing individual things found along the way. One explanation for this could be a change in the weather: nine days before the trip the diarist John Evelyn (1620-1706) writing in nearby London had referred to 'very lovely harvest weather, and a wholesome season'.[19] However, Plot, in a letter written shortly after the trip was completed, says that 'barring the first three days of my setting forth I have not enjoyed one fair [day]'.[20] We might speculate that while the weather was good for the first three days the pair had the opportunity to keep detailed notes, while thereafter the rain limited their note-taking ability. Whether my speculation is accurate or

[19] A. Dobson (ed.), *The diary of John Evelyn* (London, 1906), p. 322. The entry reads: '6th August, 1693. Very lovely harvest weather, and a wholesome season, but no garden fruit.'

[20] Plot to Charlet, 2 Sept 1693, in Gunther (ed.), *Early science in Oxford. Vol. 12, Dr. Plot and the Correspondence of the Philosophical Society of Oxford*, pp. 396-397.

not, though, we can state that the fair copy manuscript written by Browne was intended as a narrative of a particular journey and the things found along the way; this was very much a preliminary survey of a particular route to be used as both inspiration and a store of information by future scholars and individuals.

On the morning of August the 15th 1693 Robert Plot and Thomas Browne arrived at the landing place in Greenwich, from where they rode down a road which had been in use since Roman times into the heathland that is now Greenwich Park. Plot, then aged 52, and his 20 year old protégé Browne, spent the next thirteen days following the remains of this road through Rochester and Sittingbourne to Canterbury, before turning down to Hythe (near Folkestone), and then returning to Canterbury. This was a journey of about 110 miles, had they followed the road. However the route actually travelled was, Plot reported, 'as near as I can guess, about 200 miles, whereof I believe not much above 50 on horseback.'[21] The near doubling of the distance resulted from their desire to take regular off-road excursions to places of interest, most of which had been identified in advance through the reading of choreographies and antiquarian texts which referred to the area. In addition to this prior research, Plot knew the first half of their journey as a gentleman commuter, having regularly travelled the route from London to his home in Borden (near Sittingbourne). They were both, it is fair to say, as well prepared and informed as any two men might be when undertaking their research trip. While touring, the two conversed with

[21] 'Dr. Robert Plot to the Revd. Dr. Arthur Charlet Master of University College in Oxford', 2 September 1693, in Gunther (ed.), *Early science in Oxford. Vol. 12, Dr. Plot and the Correspondence of the Philosophical Society of Oxford*, pp. 396-397.

locals to confirm what their textual research had told them, get directions, and enquire into other natural and man-made phenomena which might be of interest, adding local knowledge to their own prior research. These two men were exploring, seeking both natural phenomena and antiquarian remains with the intention of preserving them in textual form. Despite their preparation, they lost their way several times, spent time searching for non-existent Danish fortifications and castles, and pondered the best place to ford a river while standing in sight of a bridge.

Far from Random Perambulations.

That tours such as this one were pre-planned rather than ad-hoc trips is clear from the account of the first day of Browne's travel narrative, the 15th August 1693, a day which was spent looking for something they had earlier read about. After a half-mile riding towards Blackheath 'one of the main highways appeared very conspicuously running directly to the corner of the park where we lost it, but recovered it again in less than half a mile.' This "main highway" was an ancient Roman Road, the following section of which is now known as Shooters Hill road (the A2/A207). The rest of the day was spent following this road for the ten miles to Crayford, and then conducting an enquiry into 'some deep perpendicular pits, mentioned by Lambert and placed in this parish'. The two explorers could not find any there, though a mile and a half further down the road, on the outskirts of Dartford, they found several pits, 'some of chalk and some of sand'. Indeed the nearest resident, 'one John Lowe' suggested there

were about 40 of the pits thereabouts.[22] They spent their afternoon, that is to say, looking for something they had previously read about, almost using 'Lambert' (hereafter Lambarde) as a travel guide.

William Lambarde, to whose work they were referring, was the author of the first printed local topography- *Perambulation of Kent: Containing the Description, Hystorie and Customs of that Shyre* (1576), which according to Plot and Browne provided an excellent introduction to the county and its most interesting features. As discussed in chapter one, Lambarde's work was based almost entirely upon written sources, owing to his profession as a lawyer with a strong interest in Anglo-Saxon legal documents, though as the title page of the *Perambulation* attests he did 'increase by the addition of some things which the Author himself hath observed.'[23] Thus, reading Lambarde was akin to reading a digest of the wide range of previous textual sources concerning Kent, with the addition of a few personal observations. Most of the errors, as in the case of the circular pits found by Plot and Browne a mile and a half away from their expected position, were considered relatively minor.

In their use of Lambarde's work, Plot and Browne show themselves to have a nuanced understanding of its strengths and deficiencies. They treated it, along with a range of other previous texts touching upon the county, as an impetus to go and study places for themselves, rather than a resource of proven information regarding the area which could be directly copied into a finished

[22] Thomas Browne, Account of a tour through Kent with Robert Plot, ff. 3, 9..

[23] Lambarde, *A perambulation of Kent* 'title page'.

manuscript or printed work. After reading Lambarde and other texts Plot and Browne knew, or thought they knew, where to venture off the Roman way (which they had read about in Camden) and explore the local countryside. Likewise, they knew or thought they knew where to find chalk pits, hunt for castles, and search after other antiquarian remnants. However, in exploring the countryside in this manner, it would seem that their intention was to correct errors in textual sources, with Lambarde in particular being regularly put right in the manuscript account. The value of these corrections is attested to by later compilations choosing to include the newly updated information.[24]

In preparing for other natural historical trips, research into written work concerning the county was complemented with sending questionnaires to the gentry of the area; although Plot had sent some queries regarding agriculture in Kent a year or two before his trip with Browne, the focus of their trip was on other matters.[25] Recent work by Adam Fox has demonstrated that the use of printed questionnaires to gather information was a growing trend, applied to a wide range of areas as the seventeenth century progressed.[26] Earlier efforts such as the Domesday Book demonstrate that questionnaires were in occasional use from the eleventh century, but the circulation of printed questionnaires in the seventeenth century by both civil and ecclesiastical authorities, as well as a series

[24] Cox, *Magna Britannia*; Gibson, *Camden's Britannia*.

[25] 'Dr. Plot's Enquiries Concerning Husbandry in Kent' and 'Enquiries Concerning Agricuture', in Gunther (ed.), *Early science in Oxford. Vol. 12, Dr. Plot and the Correspondence of the Philosophical Society of Oxford*, pp. 413-417.

[26] A. Fox, 'Printed questionnaires, research networks, and the discovery of the British Isles, 1650-1800', *Historical Journal* 53 no. 3 (2010).

of curious individuals and groups, demonstrated that print allowed the amassing of information in quantities which would have been nigh-on impossible to collect in manuscript.[27] Fox traces the way in which local antiquaries, natural historians, and geographers used increasingly standardised questionnaires to pull information together 'at community level'.[28] This change, Fox shows, spans a wider field of the technology of surveying, as can be seen, for instance, in the history of visitation articles, an early printed example of which was from the diocese of London in 1554. By the late seventeenth century, this developed into such a generic form that blank templates were printed with spares for the date and diocese of the survey; the same development could be seen in Hearth Tax articles.[29] County natural historians, then, were part of a much wider process of using print to gather and collate information.

The first known example of the use of printed questionnaires to gather natural historical information in a similar fashion to the county natural historians was Arnold Boate's (1606-1653) *An Interrogatory Relating more particularly to the Husbandry and Natural History of Ireland*, first printed as the second

[27] John Sinclair, Donald J. Withrington, and Ian R. Grant, *The statistical account of Scotland, 1791-1799* (East Ardsley, 1977), pp. 82-83, 88; Peter Burke, *A social history of knowledge : from Gutenberg to Diderot* (Cambridge, 2000), pp. 126-130.

[28] Fox, 'Printed questionnaires, research networks, and the discovery of the British Isles, 1650-1800', pp. 593-621.

[29] Ibid., pp. 599-600. Cites: Articles to be Enquired of in the Generall Visitation of Edmonde Bisshoppe of London (London, 1554), [STC: 10248]; Examples of Articles of Enquiry Concerning Matters Ecclesiastical with blank spaces are Wing: C4009AB; C4048A; C4009AD.

appendix to the second edition of Hartlib's *Legacie* (1652).[30] Arnold's elder brother Gerald had been working from 1645 to his death in 1650 to collect textual information regarding Ireland's natural history as part of the project to survey Ireland, led by the reformers surrounding Samuel Hartlib. In 1652 Arnold assented to the publication of Gerald's work as the *Natural History of Ireland*, but evidently felt the work was incomplete, hence his interrogatory published in the same year. This questionnaire, bearing its own title page, was often circulated separately from the main text and contained an alphabetical list of questions covering areas and topics that his brother's textual research had missed, as well as those which had been thoroughly covered. Upon Arnold's death in late 1653 Hartlib 'solemnly' called on Robert Boyle and Robert Child (1613-1654) to take up his work, reporting that there had been a good response to the *Interrogatory* and suggesting they complete the natural history the Boates' had started.[31] Child, who had previously performed a significant amount of research into the natural history of New England, took up the task himself.[32] This natural history of Ireland, and the use of questionnaires towards it, was intended as a utilitarian survey targeted at the exploitation of the land: listing

[30] Robert Child and Samuel Hartlib, *Samuel Hartlib his legacie, or, An enlargement of the Discourse of husbandry used in Brabant and Flaunders wherein are bequeathed to the common-wealth of England more outlandish and domestick experiments and secrets in reference to universall husbandry* (London, 1651).

[31] Letters from Hartlib to Boyle, 28 February and 8 May 1654, Michael Hunter and Edward Bradford Davis (eds.), *The works of Robert Boyle*, 14 vols., vol. 6 (London, 1999), pp. 81, 84-85.

[32] Webster, *The great instauration : science, medicine and reform, 1626-1660*, pp. 428-431.

where the best landing points were, which timber resources were most accessible, etc.[33]

In England, meanwhile, the only use of printed questionnaires for natural historical uses at this time was to investigate specific subjects from which information could be gleaned that would be of intellectual or cultural use to contemporaries. For instance, the development of trades such as pottery was thought to offer information of relevance to the understanding of rocks, and the use of bath waters, which was to remain a popular focus for natural historical study for well over a century, was highly important to gentlemen at the time both medically and culturally.[34] Two individuals who had been peripherally involved in the development of questionnaires for surveying Ireland, Boyle and Robert Hooke (1635-1703), led the drive in 'preparing and dispersing instructions to this end' around the time of the foundation of the Royal Society.[35] The most

[33] Gerard Boate, *Irelands naturall history being a true and ample description of its situation, greatness, shape, and nature, of its hills, woods, heaths, bogs, of its fruitfull parts, and profitable grounds : with the severall ways of manuring and improving the same : with its heads or promontories, harbours, roads, and bays, of its springs, and fountains, brooks, rivers, loghs, of its metalls, mineralls, free-stone, marble, sea-coal, turf, and other things that are taken out of the ground : and lastly of the nature and temperature of its air and season, and what diseases it is free from or subject unto : conducing to the advancement of navigation, husbandry, and other profitable arts and professions*. Edited by Samuel Hartlib (London, 1657).

[34] See for example the discussions in Gunther (ed.), *Early science in Oxford. Vol. 4, The Philosophical Society*, pp. 97, 114-115, 116; Gunther (ed.), *Early science in Oxford. Vol. 12, Dr. Plot and the Correspondence of the Philosophical Society of Oxford*, pp. 63, 140, 160.

[35] Michael Hunter, 'Robert Boyle and the early Royal Society: a reciprocal exchange in the making of Baconian science', *British Journal for the History of Science* 40 no. 1 (2007). cites: Phil. Trans. of the Roy. Soc., i (1666), 140-3; Phil. Trans. of the Roy. Soc., ii (1667), 415-22, 467-72, 554-5; Phil. Trans. of the Roy. Soc., iii (1668), 634-9; Royal Society, Classified Papers, vol. 19; Robert Hooke, "Preface", in Robert Knox, An Historical Relation of the Island of Ceylon, in the East-Indies (London, 1681), sig. A2v.

famous example of the more general questionnaires which begin to develop over the following decade, by Boyle himself, was the 'General heads for the natural history of a country great or small', published in *Philosophical Transactions* in 1665-6. This short article, extracted from 'the unpublished part of the *Usefulness of Natural and Experimental Philosophy*', was designed to provide a template for enquiries, for instance enquiring as to the longitude and latitude, climate, water, earth and local resources, and other questions which can be asked of virtually all locations.[36] Boyle's 'general heads' was later printed in a much expanded version as a pamphlet intended to advise men 'in their travels… what things they are to inform themselves of in every Country they come to, or by what Method they may make Enquiries about things to be known there'. This time, rather than general enquiries relevant for all areas, Boyle's focus was on what he and the Royal Society wanted to know about specific locations; this was a project of differentiation, asking how locales and environments differed across the world.[37]

Given the initial enthusiasm for these questionnaires, it was not long before grander projects were proposed, and in 1669 Charles II had licenced John Ogilby to produce a five-volume atlas of the world, with one volume each for Africa, America, Asia and Europe, along with one on "Britannia" in three parts: a

[36] Robert Boyle, 'General Heads for a Natural History of a Countrey, Great or Small, Imparted Likewise by Mr. Boyle', *Philosophical Transactions (1665-1678)* 1 (1666), pp. 186-189.

[37] Robert Boyle, *General heads for the natural history of a country great or small drawn out for the use of travellers and navigators* (London, 1692), p. 2.

road-book, a collection of city plans, and a 'series of county surveys'.[38] A group including Ogilby, Hooke, Sir John Hoskins (1634-1705), Christopher Wren (1632-1723), Gregory King, and John Aubrey met in 1672 and formulated *Queries in Order to the Description of Britannia*, a single folio set of questions which, in addition to natural history and topography, were concerned with social customs, administrative structures and antiquities. *Queries in Order to*, in various versions, contained between nineteen and twenty-two queries enquiring into everything from 'houses of nobility and gentry' to 'waters, springs and baths', 'places of birth, education or habitation of eminent persons, in all ages', and was regularly circulated with additional hand-written queries of interest to particular individuals within the group, such as in one example requesting information regarding 'obsolete and peculiar words' and 'old customs' in John Aubrey's hand.[39] Aubrey's involvement in the *Britannia* project, in addition to the drafting of the *Queries*, was down to an invitation by Ogilby to investigate Surrey.

As part of Aubrey's investigation of Surrey, initially spurred by Ogilby's invitation but quickly developing into a self-led and entirely separate project, this saw the first example of the queries being circulated on a local level for county natural historical research. Indeed the queries formed a central part of the

[38] E. G. R. Taylor, 'The Geographical Ideas of Robert Hooke', *Geographical Journal* 89 no. 6 (1937), p. 532.

[39] John Ogilby, *Queries in order to the description of Britannia* (London, 1673). There are two copies annotated by Aubrey, in Bodleian Library, MS Aubrey 4, John Aubrey, A Perambulation of Surrey, f. 243 has the quote above and "My name to be putt to the Counties which I describe"; f. 244r: "These Queries were considered of at severall meetings by Christopher Wren Ll.D. John Hoskyns Esq R.S.S. Mr Robert Hooke R.S.S. Mr Jo. Ogilby Mr Jo. Aubrey Mr Gregory King."

planning for a perambulation through Surrey in the summer of 1673. Likewise, as Aubrey was developing his interests in Wiltshire he found questionnaires a useful addition to personal trips over the following two years.[40] Simultaneously, in 1674 after collaboration with Robert Hooke and Aubrey himself, Robert Plot printed his *Quar's to be propounded to the most ingenious of each County in my Travels through England*.[41] This list of twenty-two questions covered a wide variety of topics, from whether there were any eminent mathematicians in the area to local winds, tides, waters and aqueducts. The main focus, though, was to find 'any body in this county that is studious… any strange qualified man, or any body that has been the inventor'; the queries were mainly, it appears, intended to find *people* rather than things, helping Plot decide who and where to visit on his research trips as part of the preparation for the *Natural History of Oxfordshire,* a book which was completed over the following two years. Questionnaires, thus, served a dual purpose: firstly, they were used to collect a list of places to visit; secondly, and perhaps more importantly, they provided the names of people who were interested in the tour, and who might be worth conversing with.

Demonstrating the utility of this method of using questionnaires to find both people and things worth visiting in an area, both Aubrey and Plot continued to use questionnaires in their later research. Aubrey's work on Wiltshire was a

[40] John Aubrey to William Musgrave, 27 February 1684/5, in Gunther (ed.), *Early science in Oxford. Vol. 12, Dr. Plot and the Correspondence of the Philosophical Society of Oxford*, p. 269. Also see Hunter, *John Aubrey*, pp. 71-73.

[41] Robert Plot, *Enquiries to be propounded to the most ingenious of each county in my travels through England and Wales in order to their history of nature and arts* (Oxford, 1679).

life-long endeavour, and included the circulation of some 'natural queries' in 1685, which elicited 'considerable remarks' from the gentry of the county. Unfortunately the queries themselves have not survived, but judging by the thirty-six chapter headings of Aubrey's manuscript *Natural History of Wiltshire* we may reasonably suggest, as Fox does, that the queries contained thirty-six questions.[42] The circulation of these queries also gives an insight into the use of correspondence networks in collecting natural historical information, with Aubrey writing on Feb 27 1684/5 to his friend William Musgrave requesting he 'insert my natural queries' into future letters to Mr. Cole, a gentleman with a considerable estate in Wiltshire which evidently Aubrey desired information concerning.[43] Evidently Aubrey did not feel that direct contact with Cole would elicit his support, so he utilised his wider network of friends to ensure a better response. This illustrates the importance of personal contact in collecting information, which allowed these networks to span the higher reaches of local gentry without breaking social decorum. Such social networks of interested gentlemen proved invaluable to Plot and Aubrey's research.

Not all attempts to use questionnaires and correspondence for local natural historical research were successful. Fox suggests 'some clearly feared that such questions had something to do with taxation or other fiscal assessment

[42] Fox, 'Printed questionnaires, research networks, and the discovery of the British Isles, 1650-1800'.

[43] Aubrey to Musgrave, 27 Feb. 1684/5 in Gunther (ed.), *Early science in Oxford. Vol. 12, Dr. Plot and the Correspondence of the Philosophical Society of Oxford*, pp. 268-269.

and were naturally suspicious',[44] which seems like a reasonable proposition. While I have come across no evidence to support it, it can be read into the following quote from Nathaniel Johnston who made his displeasure most clear following the lack of response to his pamphlet containing twenty-four *Enquiries for Information towards the Illustrating and Compleating the Antiquities and Natural History of York-shire* (1683), writing to his friend the antiquary Ralph Thoresby to complain that:

> such is the neglect or supineness of people, that I have not yet [in October] had one return made to me of the several hundreds of enquiries I have dispersed. Some few have sent me in some deeds, so that I must be forced to print a number more of enquiries without proposals, and a letter with them to desire gentlemen to make more expedition.[45]

The people who received Johnston's queries evidently did not understand what he was after, with few responses of use being received, and some instead responding by sending their deeds. We may surmise that locals in Yorkshire were familiar with questionnaires regarding land-holding (which we can reasonably link to taxation in their minds), but not those regarding natural history. In some cases, the sheer strangeness of the county natural historical project played its own role. For instance, when in 1679 Plot issued enquiries to the gentry in Staffordshire, similar to those he had used in Oxfordshire, he received only a few responses and was rightfully wary of their quality: the locals

[44] Fox, 'Printed questionnaires, research networks, and the discovery of the British Isles, 1650-1800', p. 619.

[45] Thomas Kirk (ed.), *Letters of eminent men, addressed to Ralph Thoresby F. R. S.: now first published from the originals*, 4 vols., vol. 1 (London, 1832), p. 20.

gave responses intended to 'humbug old Plot', a trend which apparently continued through his tours themselves.[46] The reasons for this reluctance to offer information are unclear, though; it may have been that some of the gentry of Staffordshire did not appreciate an outsider taking up the history of their county, despite his warm invitation from local gentry such as Ingestre and Gerrard. More likely, given the use of 'humbug', is that those on the receiving end of questions regarding local rocks, antiquities and monuments found the questions and by extension the questioner strange and responded by having a little fun at their expense.

The responses such setbacks varied, while demonstrating the stubbornness and occasional single-mindedness common to all of the county natural historians. Johnston continued to acquire more and more information from his personal research trips. However, he did not send out further queries, and due to the paucity of support he never realised his ambition to have his notes printed in vastly shortened form; neither did anybody see fit to publish his work posthumously as had happened with, for example, Aubrey. Johnston was not the only county natural historian to struggle producing a natural history of Yorkshire. John Browne's *Proposals by Way of a Contribution for Writing a Natural History of Yorkshire* came to nothing also, suggesting perhaps that the Yorkshire gentry did not share the interests of those of Oxfordshire,

[46] 'It was a standing joke among the Staffordshire squires how readily they had' humbugged old Plot' when he toured the county', Richard Rawlinson, *A proposed history of Oxfordshire, 1715-1720*. Edited by Brian J. Enright (Oxford, 1951), p. 65, footnote 61. Thomas Seacombe, 'Plot, Robert (1640-1696)', *Dictionary of National Biography, 1885-1900* (Oxford, 1896), p. 425.

Northamptonshire, Surrey &c.. Plot, on the other hand, had the support of enough of the Staffordshire gentry to continue

While others struggled, and despite his own troubles with the Staffordshire queries, Plot continued to successfully collect information through the circulation of printed sheets. Regarding Kent, for instance, he had in 1690 or 1691 sent out two broadsheets, one regarding husbandry, and one agriculture. The first discussed grains, peas, grasses, and farming methods including soil preparation, sowing, harvesting and tool usage, as well as a generic query regarding 'any new improvement of Arable, or Pasture Land, or other Curiosity in Husbandry.'[47] Regarding agriculture, in a more specific document he asked discrete questions regarding soil types in the county and how each were managed and farmed, as well as how meadows were managed.[48] In this case there was a potential personal motivation for wanting to know more about local agriculture, as Plot was now living in 'a little cottage, with a little land belonging to it, which I hope I may be able to manage myself, and get enough out of it to feed my little family.'[49] But even if the Kent questionnaires may be explained as the attempt to learn agricultural techniques for his new land, a year later in 1694 Plot sent out *Enquiries to be Propounded to the most Sincere and Intelligent in*

[47] 'Dr. Plot's Enquiries Concerning Husbandry in Kent', in Gunther (ed.), *Early science in Oxford. Vol. 12, Dr. Plot and the Correspondence of the Philosophical Society of Oxford*, p. 414.

[48] 'Enquiries Concerning Agriculture' in ibid., pp. 415-417. *Early Science in Oxford*. Vol. XII, ed. Gunther, 28

[49] 'a letter to an Oxford friend' by Plot in ibid., p. 359.. Also see the touching "Borden Gazette" written to his wife Rebeckah (then at her fathers) regarding the repair of their house in April 1691, on pp. 385-7 of the same volume.

the Cities of London and Westminster (1694);[50] which he intended to use as part of the planning for the natural history of Middlesex and London.

As well as taking information from people who lived in the areas being researched, social networks also allowed two-way collaboration with those virtuosos who had geographically wider, but topically defined, interests. Aubrey's observations themselves, of 'any thing extraordinary relating to natural history or experiment', were requested by natural historians such as John Ray, who was compiling information for his studies of what we would term botany and zoology.[51] Likewise there was extensive correspondence between Nathaniel Johnston and the naturalist Martin Lister (bap. 1639, d. 1712) on topics such as mine drainage, sulphur and the dissection of animals, which saw information flowing both ways. In particular, Lister requested extensive information from Johnston regarding a sulphur well and spar at Askerne in Yorkshire, which Johnston was happy to provide him with in a three page account sent on the 13th of May 1672.[52] Johnston, at the same time, used Lister as a conduit to gather books, copies of *Philosophical Transactions* and recommendations for Apothecaries, helping Johnston to overcome the long-distance relationship between himself and the intellectual communities of Oxford and London.[53] So,

[50] Robert Plot, *Enquiries to be propounded to the most sincere and intelligent in the cities of London and Westminster, in order to their history of nature, arts, and antiquities* (Oxford, 1693).

[51] Bodleian Library, MS Aubrey 13- Letters to Aubrey, P-Y, John Ray to John Aubrey, 15 February 1687/8, f. 172.

[52] Bodleian Library, MS Lister 35, Lister's Correspondence, ff. 13-15.

[53] See for example the letters dated 3rd June 1672 and 21st January 1673 ibid., ff. 16, 18.

while the foci of interest of each of the county natural historians may have been their particular locale, their correspondence networks spread through the country, and were utilised to glean relevant or curious information whenever the opportunity arose.

In all the cases of county natural historians using questionnaires to gather information, the intention appears to have been, alongside prior reading, to help plan the route along which research trips would be undertaken and to decide both who and what to visit along the way. With the exception of Plot's work in Oxfordshire, which attempted to cover the county in one systematic two-month trip, the research for each of the other county natural histories was compiled over shorter, one to two week trips undertaken through the summer months; thus leveraging local information regarding the route along which interesting information could be found would have saved considerable time or, alternatively, given a much deeper impression of the county. By having a thoroughly researched, but flexible, plan these individuals were able to design their trips to visit phenomena and people useful to their work. As such, the success of the endeavour was reliant upon the wide networks of correspondence which had been, as the last chapter discussed, built at University and developed thereafter.

These social networks, as discussed in the previous chapter, were not solely conduits of information, they also assisted greatly in the solicitation of patronage. Plot's abortive project for the natural history of London and Westminster provides an illustrative example. Before Plot's ill health and

consequent withdrawal from public life to his home in Kent intervened, he had solicited subscriptions for the project. Given Plot's excellent reputation they had been readily available, and he had been promised between five and ten pounds each from 'the Lord Mayor and most of the Aldermen'. In a letter to his friend and regular correspondent, the well-connected Arthur Charlet (1655-1722), Plot wrote:

> I would you could persuade your friend Dr. Ratcliffe to be cordial and serious in this matter, and to use his interest for me. I doubt not he might procure me at least £500 by his single interest, were he really my friend in it.[54]

In addition to the financial support Plot hoped to gain from his correspondence with Charlet, he also mentions extensive manuscripts which he has come across in his research already; for instance, the 'good number' of folios found 'in Mr. Farmer's house at Sommerton, betwixt the ceiling of an upper room and the slats (where they had been hid ever since the late Civil War)'[55]. He also wrote to the president of the Royal Society to request access to their collections.[56] These connections, had he gone ahead with the project, would have ensured its success and the support of the locals, in the same way that the letter of recommendation from the gentry of Oxford did his initial work in Oxfordshire.

[54] Plot to Charlet Aug 2, 1694, in Gunther (ed.), *Early science in Oxford. Vol. 12, Dr. Plot and the Correspondence of the Philosophical Society of Oxford*, p. 400.

[55] Plot to Charlet Aug 2, 1694, in ibid.

[56] Plot to Sr Robert Southwell, Kt. 24 Oct 1694, in ibid., p. 401.

John Morton illustrates the problem that successful efforts to elicit interest among the local gentry through the use of questionnaires could bring. Influenced by Edward Lhwyd, whose parochial surveys of Wales had been well-received by minor gentry and clergy, Morton in July 1700 issued *Certain Heads intended to be treated, of in a Natural History of Northamptonshire*, requesting that 'those ingenious Gentlemen of the County, that have already, or shall hereafter make any Observations or Collections, that may be serviceable to this Design, will be pleased to communicate them.'[57] The responses he received had initially pleased him, as can be seen in the letter he send to Lhwyd the following March, in which he says: 'some of the Gentlemen of the County seem to be fond of it';[58] however by the following March the initial enthusiasm seems to have worn off as Morton realised the 'great labours and difficulties' of his endeavour, and the 'expectations of the Gentlemen of Northamptonshire… All my correspondents I suspect begin to complain I am slow, lazy, or delatory.'[59] The delays, which he apologised for in the preface, meant that a work he had originally intended to publish in 1703 or 4 ended up coming out in 1710. His problem was the opposite of Johnston's: having been successful soliciting information, he had raised the expectations of a large number of gentlemen of *Northamptonshire* while gathering a huge amount of information which he felt duty-bound to confirm or research personally.

[57] John Morton to Edward Lhwyd, 25 July 1700 in Bodleian Library, MS Ashmole 1816, Correspondence between Morton and Lhwyd, f. 427.

[58] John Morton to Edward Lhwyd, 7 March 1701 in ibid., ff. 425-426.

[59] John Morton to Edward Lhwyd, 4 March 1702 in ibid., ff. 438.

'A Great Deal of Pains… But With a Great Delight'

Due to the lack of any extensive preparation in what appears to have been a preliminary journey to collect information and probably objects, Plot and Browne on their trip through Kent relied upon a less formal network for practical advice and information regarding the locale they were visiting; it was not a network of 'men of curiosity' to whom they turned, but men they met along the way. The third day of their tour, 17th August 1693, provides an illustrative example of both the use of and problems associated with local knowledge. They were following the Roman way, from Chinglewell towards Rochester. As they entered the town, which was home to some 3000 people,[60] the path of the road was obscured. Given that the River Medway acted as the boundary of the far side of the town, they felt 'it was rational to enquire for the most fordable' part of the River, presuming that they could find the Roman road on the other side. The locals informed them that there were two places, around a mile apart, at which the river may be forded, one of which was near Friendsbury church where at low water 'in our grandfathers days, by the help of a horses head, any one might pass the river', suggesting a fairly simple crossing.[61] Both potential locations were investigated, and a small hill nearby climbed to get a better view, with no luck as to finding the Roman road. Unfortunately, despite this help with potential locations for fording the River, both local and prior knowledge had failed Plot and Browne: the Romans had not only forded the Medway, they had also built a

[60] C. W. Chalklin, *Seventeenth-century Kent: a social and economic history* (London, 1965), pp. 30-36.

[61] Thomas Browne, Account of a tour through Kent with Robert Plot, ff. 8-9.

bridge across it which had lasted through until the winter of 1381/2, on the site of the bridge which Plot and Browne used themselves.[62] As a result of this they lost the Roman road for about three miles, only recovering it on the far side of Chatham hill.

Despite the occasionally problematic nature of relying solely on locals for information, the success of Plot and Browne's trip rested upon this type of personal assistance by the inhabitants of the area, as evidenced earlier regarding John Lowe's aid in their finding chalk pits. The importance of local aid was also clearly and openly recorded in printed county natural histories. Plot, for instance, was guided through local environments by people such as William Barnesley, a 'good old Gentleman', who, as well as furnishing Plot with a report of a solar Iris (a circular light which often appears after a rainbow), rode with him for a length of time to show him around his part of Staffordshire- 'notwithstanding his Age'.[63] More often, though, the names of those providing assistance remain unrecorded, their presence is only notable in the text through regular references to the historian in question 'enquir[ing]' into various matters among local people. Local assistance, then, extended from the provision of extensive guided tours such as that provided by Barnesley in Staffordshire, through to what presumably were brief conversations on topics of interest to both the locals and the investigators, as was the case by Plot and Browne in Kent, and was

[62] 'The Roman Bridge', *The Rochester Bridge Trust*, <http://www.rbt.org.uk/bridges/roman.htm> (4 Oct).

[63] Plot, *of Stafford-shire*, p. 6.

considered important enough to record in the public version of the produced works, whether manuscript or print.

There were many cases in which it was impossible for Plot and Browne to determine with any certainty whether previous authors or their own prior knowledge was correct. This can be seen when the two enquired after a Danish encampment that Lambarde had identified near Greenwich- an early-eleventh-century Danish invasion led by Swaine was said at the time to have given Swanscombe its name. 'After a strict inquiry' they had neither heard nor seen evidence of the camp. In the same area they were unable to find Swanscombe castle which John Philpot, a herald who had made extensive collections for a history of Kent before the Civil War, suggested had been built as a tribute to Swaine.[64] After recounting both Lambarde and Philpot's accounts, and adding their own discussions with locals, including the lord of the Manor, Mr. Weldon, Browne bemoans the lack of conclusive evidence and ventures a possible explanation: 'perhaps Mr Weldon's house stands on the castle and the Danish fortifications are dug away at Greenhithe.' Whether they were searching for the Norman mottle they thought to be a natural feature, or were confused regarding the castle in nearby Rochester following their textual research, the two men were clear in one thing: they did not have a firm conclusion and so were happy

[64] Thomas Browne, Account of a tour through Kent with Robert Plot, f. 7.; Philpot's 'Collections for a History of Kent' are in the British Library, Lansdowne MSS. 267, 268, 269, 276 and also see Harleian MS. 3917, 'A Collection of Monuments and Arms in Churches of Kent, with a few pedigrees inserted'.

to venture a possible explanation as a modest conjecture, making the speculative element of this section of their travel narrative clear.

Twentieth-century investigations by local historians, following a vicious debate regarding the inclusion of a Viking ship on Swanscombe's civic badge, have concluded that Swaine had far less influence on the area's history than previously thought, discrediting the proposed genealogical roots of Swanscombe. Likewise, the only castle uncovered was a Norman "motte" which sat in an area described by Browne and Plot as a raised mound, which they evidently did not recognise as a castle. It is more probable, though, that the reports of a castle given to the two explorers, rather than referring to the Norman motte, stem from a confused account of the Lord of Swanscombe Manor's position as one of the principal captains of Rochester Castle. That castle, also unmentioned in the account, was granted to the Weldon's under James I and was stripped for timber and other building materials through the seventeenth century, leaving the ruin largely as we see it today.[65] I include this simply to note that the twentieth and twenty-first century conclusions are no more certain than those of Plot and Browne, and that again, like Plot and Browne, our contemporary local historians make a "best guess" based on the available evidence, rather than claiming certainty.

Plot and Browne, of course, were not infallible, and on occasion their work actually served to *reduce* the accuracy of knowledge of the local area. One

[65] Christopher Bull, 'From Domesday to the Industrial Era 1086 - 1825', *Swanscombe - Local History*, <http://swanscombe.com/newsevents/history.asp> (3 Jul).

instance of this can be seen from their conjectures regarding the chalk pits found a mile and a half from where Lambarde located them, which more recent research has suggested were better explained by Camden than Browne. These pits, Browne writes, were similar to some which had been described by Camden in Essex; Camden 'supposes that the Britains dug chalk out of them but,' Browne conjectures 'surely that was not their purpose' given the free availability of chalk nearer the surface.[66] Indeed there was so much chalk available that it was strip-mined for export during the eighteenth century, and used locally in huge quantities for cement manufacture through the nineteenth and twentieth centuries; Browne's speculation demonstrates a good knowledge of the surrounding landscape and was therefore not unreasonable.[67] The pits encountered by Plot and Browne, though, bore no resemblance to the strip-mining of later generations, on the surface showing as a hole 'scarce a fathom [1.8m] broad', but '9 fathoms [16.2m] deep' and 'within three yards of the bottom… it expatiates itself and is of a circular form'. Browne raises the possibility that these pits were military in origin used, as 'Tacitus says the Germans did', to hide from invading forces, in this case the Danes. His evidence for this came from records of conversations in Essex in which similar pits were called 'Dane's holes'- though given that locals in Dartford had no name for them this was only raised as a possibility. In the centuries after the publication of Plot and Browne's trip, the mystery of what these pits were used for continued to vex

[66] Thomas Browne, Account of a tour through Kent with Robert Plot, f. 11.

[67] Bull, 'From Domesday to the Industrial Era 1086 - 1825',

local natural historians and antiquarians. Suggestions put forward included their use as ancient grain pits and Druid altars, but we now believe, thanks to work by Kent Archaeological Society and Kent Underground Research Group, that they were indeed chalk mines. According to this work, farmers used these mines to get pure chalk in order to enrich their soil, and because of the narrow opening in relation to the amount of chalk that could be extracted this method had the advantage of not destroying a large area of their farmland.[68] In other words, on this occasion, recent research has sided with Camden over Browne.

"Educated guesswork" would be perhaps the most accurate summary of the preceding examples in which Plot and Browne, as well as their twentieth-century counterparts, offer conjectures regarding the presence of castles and the use of chalk pits. Plot and Browne compiled evidence taken from previous texts, discussions with locals, their wider knowledge, and their personal observations, and deduced what they considered to be the most plausible explanation. Importantly, they made it clear that this was their conjecture, not a matter of fact- 'perhaps' is about as certain as they could get in these situations. However, it was personal observations undertaken along the way that were *the* most common source of information in both printed and manuscript county natural histories, as is illustrated particularly clearly in Plot and Browne's narrative.

Importantly, and unlike in the writings of contemporaries such as Robert Hooke, the *personal* was not edited out of the observations reported in county

[68] 'Deneholes', *Kent Underground Research Group*, <http://www.kurg.org.uk/sites/deneholes.htm> (4 Sept.).

natural histories- indeed the personal pronoun is a regular occurrence, and even where it is absent there is a clear sense of implied narrative.[69] Towards the end of their trip, for instance, Browne gives an account of the 'diverse places [in which] the Roman way is over grown with bushes at Hempton hill within less than three miles of Hyde it turns to the right hand and winds about to the left again going down to Stanford where it is quite worn out'.[70] By giving information regarding distances and directions in such a manner in the context of a travel narrative the writer not only conveys the information, but gives an impression of personal experience. The reader could envisage the trip itself and could, potentially, replicate it were they ever in the area. However, most of this direct narrative of the journey itself did not survive the editing process: from reading *of Oxfordshire*, one would have no idea as to the order in which Plot surveyed the county, while this is eminently clear from his notebooks.[71]

Literary Technologies

The transfer of information from notebooks and travel journals into a finished county natural history, whether manuscript or printed, involved the utilisation of a number of literary technologies. I intentionally utilise the phrase 'literary technology' here from Shapin and Schaffer's *Leviathan and the Air Pump*, to mean the series of methods of description by which the reader was convinced of

[69] Lotte Mulligan, 'Self-Scrutiny and the Study of Nature: Robert Hooke's Diary as Natural History', *The Journal of British Studies* 35 no. 3 (1996), p. 319.

[70] Thomas Browne, Account of a tour through Kent with Robert Plot, f. 21.

[71] Emery, 'English Regional Studies from Aubrey to Defoe'.; Bodleian Library, MS Rawlinson K. 15283, Robert Plot's Notebooks, 1703/4

the validity of an observation. While 'the rules of the game by which matters of fact were experimentally produced' and communicated by virtual witnessing cannot be applied directly to the county natural history, a series of analogous literary technologies were utilised.[72] This section will explore several such technologies, all of which centre upon the conveying of personal experience or narrative, a very different focus from the virtual witnessing discussed by Shapin and Schaffer, which stressed the generic nature of an experiment. In the description of observations, experiments, and even the collection of objects, the central focus of the finished county natural history came to be upon sensory and particular knowledge.

The clear implication of personal experience and narrative, though shorn of the details of the trip itself, shines through in both the less detailed section of Browne's travel account and in the published county natural histories. When describing the ruins of Rutupium station, for instance, Browne writes that they 'are of a form containing about five acres of land. The North wall is 168 paces long, the south 126, and the West 168'.[73] While the thought of counting 462 steps in order to get an accurate description might seem excessive, in other cases there are much larger examples such as Plot's description of a pool 'at Aqualat [Staffordshire,] 1848 yards long, and 672 yards broad, which it holds

[72] Shapin and Schaffer, *Leviathan and the air-pump*, p. 60.. On literary technologies also see: Steven Shapin, 'Pump and Circumstance: Robert Boyle's Literary Technology', *Social Studies of Science* 14 no. 4 (1984), pp. 481-520.

[73] Thomas Browne, Account of a tour through Kent with Robert Plot, f. 17.

within a trifle more or less, almost from one end to the other'.[74] Not only has he, or somebody he was travelling with, measured the length and breadth of this lake, he has done so in a way accurate enough to estimate the width at several points. While some precise measurements, such as these, were "macro" in scale, others were very much "micro". Morton, for instance, found that 'from a quart of the water of shotwell spring… gently evaporated in the Month of May, 1710 in a dry time, I had six grains of a farinaceous powder of a saltish taste.'[75] In both the case of pacing out a wall or lake, and that of weighing the amount of condensate in spring water, the county natural historian was providing the reader with an accurate and honest description; this was a simple observation reported through a personal narrative which the authors considered devoid of theoretical import or content.

While measurements were commonly reported, most of the final text was based on, as Robinson, the author of *Natural History of Westmorland and Northumberland* put it, 'such ocular observations as I have made', and the detailed description of these observations[76]. While Robinson's work was by a distance the most theoretically engaged of the county natural histories, it remains filled with descriptions of observed phenomena, such as the 'mighty

[74] Plot, *of Stafford-shire*, p. 43.

[75] Morton, *of Northampton-shire*, p. 272.

[76] Thomas Robinson, *An essay towards a natural history of Westmorland and Cumberland : wherein an account is given of their several mineral and surface productions, ... ; to which is annexed, A vindication of the philosophical and theological paraphrase of the Mosaick system of the creation, &c* (London, 1709). preface

vein of copperish sulphur, two yards wide'[77] found on one trip through the area. Being based on a lifetime's observations, along with at least three planned research trips, the exact provenance of each nugget of information is sometimes difficult to determine, but narrative details regarding the collection of some items are still included. On another occasion, when exploring 'the mountain whereon we discovered the iron vein, being so very steep, I durst not climb up to it'; as an aside: we must remember that not all locations within England are easily accessible! Fortunately, on this occasion Robinson was not alone and so 'sent [his] son to see it.'[78] This is one example in which the "travel narrative" element which is so strongly contained in Plot and Browne's account of their trip into Kent feeds through into a published county natural history, though in most of the cases all that remains is the clear inference that personal observations were used to gather the individual matters of fact recorded in the works.

When dealing with most types of phenomena, the Natural Histories *of Oxfordshire* and *Staffordshire* described observations which had been made, and listed reports gathered by conversation with locals. But, with echoes in particular Plot experimented, analysing the results using what he terms a 'new analytical method'. Unfortunately, he does not explain how he conducted the experiment, just the observed results, but we can safely make a few inferences. Firstly, his method must have involved at least two people as many of the observations involve a "speaker/clapper" in one location, and somebody hearing the echo at

[77] Ibid., p. 4.

[78] Ibid., p. 87.

another. Secondly, he began with simple echoes (claps, monosyllabic words) and progressed to the more complex (polysyllabic phrases). Thirdly, it is evident that he tried to repeat the experiment in different climactic conditions, and recorded the conditions in each case, though he did not in his speculations attempt to provide a theory of how climate influences echoes in general. The conclusion reached by Plot formed a description of the relationship between an object, the source of the sound, and the position of the listener, as shown in the illustration below.

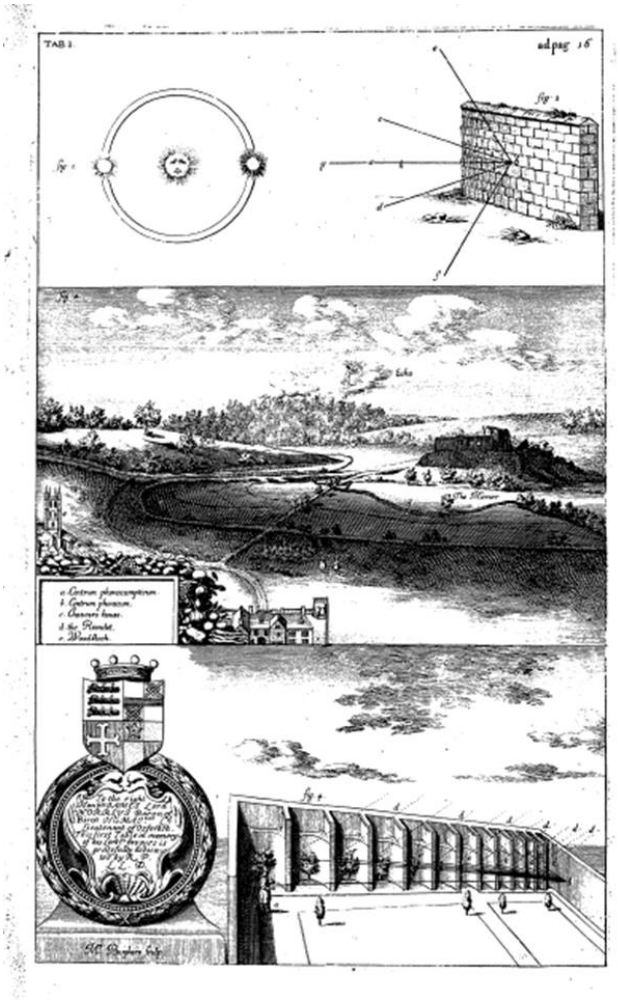


Figure 4- Illustrated Echoes. Source: Plot, *of Oxfordshire*, pp. 16-17.

The top figure demonstrates Plot's general theorem, that the best position to listen for a sound is 'at right angles with the object… not too near, or too far off', and that, if at an angle, the echo can be heard at a corresponding angle. However, while he was interested in what we could term the science of sound, the most fascinating echoes from Plot's perspective were singular. The central illustration shows one such location, at Lord Rochester's lodge, at which there was an echo that was only heard when standing in a certain location between two hills; however Plot was unable to identify the object offering the reflection with any certainty. The bottom illustration, which shows a wall around forty yards long in the garden of Mr Pawling Mercer, shows how, at this particular location, there can be anything up to eleven repeats of an echo 'so thick and close, that even a *disyllable* breeds a confusion.'[79] The process through which he must have gone to determine this, along with the angle of reflection of monosyllabic claps, would have required a considerable investment of time and patience during his journey, to say the least. This demonstrates that, even with echoes, where Plot had a clear theoretical interest, the primary focus of his work was the cataloguing and clear description of singular phenomena. He was particularly interested in finding those echoes that would return the longest spoken phrase:

> the Echo near the Church at the parish of Tatenhill, which will return four or five syllables at least, though spoken almost with as low a voice as we ordinarily use in our common discourse… the best of the kind in the County,

[79] Plot, *of Oxford-shire*, pp. 13-15.

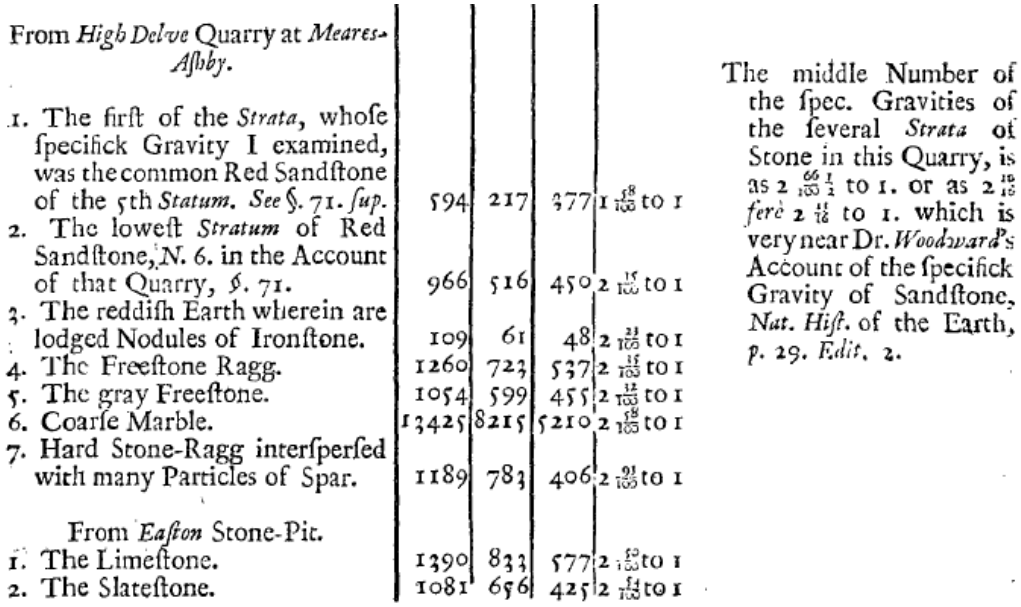
> is that at Norbury, North-easterly from the Manor near a little bank under the wood side about 80. poles or 440. yards distant, which in a still say will repeat 10. or a 11. syllables distinctly, or 12 or 13. if spoken quick.[80]

John Morton's experiments on the properties of earth similarly utilised the literary technology of describing specific matters of fact while providing conjectures on whether they can be generalised through the county. As part of his chapter discussing the properties of the earth in Northamptonshire, Morton spends several sections reporting the specific gravity of a variety of the materials found, specifically using examples of the substances 'as free, or freer from Intermixture of Clay, Sand, or other Steril Matter, than any I cou'd find.' The result is a table giving the 'weight of the Pieces in Air and in Water, and their Proportion in Weight to an equal Bulk of Water; By which means the Specific Gravity of each is known.'[81] He is using a precise and simple technique, indeed one still in use today, in which the samples of material are chosen and controlled in order to get the most accurate measurements possible of the relationship between the object's density and that of water. A short section of this table is reproduced below:[82]

[80] Plot, *of Stafford-shire*, pp. 28-29.

[81] Morton, *of Northampton-shire*, p. 131.

[82] Indeed, the table itself can be represented as a literary technology, but as Morton was the only county natural historian who utilised it extensively I shall refrain from discussing it as such here. See, for instance, E.R. Tufte, *The visual display of quantitative information* (London, 1983).



From *High Delve* Quarry at *Meares-Aſhby*.				
1. The firſt of the *Strata*, whoſe ſpecifick Gravity I examined, was the common Red Sandſtone of the 5th *Statum. See* §. 71. *ſup.*	594	217	377	1 $\frac{58}{100}$ to 1
2. The loweſt *Stratum* of Red Sandſtone, *N.* 6. in the Account of that Quarry, §. 71.	966	516	450	2 $\frac{15}{100}$ to 1
3. The reddiſh Earth wherein are lodged Nodules of Ironſtone.	109	61	48	2 $\frac{21}{100}$ to 1
4. The Freeſtone Ragg.	1260	723	537	2 $\frac{15}{100}$ to 1
5. The gray Freeſtone.	1054	599	455	2 $\frac{12}{100}$ to 1
6. Coarſe Marble.	13425	8215	5210	2 $\frac{58}{100}$ to 1
7. Hard Stone-Ragg interſperſed with many Particles of Spar.	1189	783	406	2 $\frac{21}{100}$ to 1
From *Eaſton* Stone-Pit.				
1. The Limeſtone.	1390	833	577	2 $\frac{53}{100}$ to 1
2. The Slateſtone.	1081	656	425	2 $\frac{54}{100}$ to 1

The middle Number of the ſpec. Gravities of the ſeveral *Strata* of Stone in this Quarry, is as 2 $\frac{66}{100}\frac{1}{2}$ to 1. or as 2 $\frac{16}{25}$ *ferè* 2 $\frac{11}{18}$ to 1. which is very near Dr. *Woodward*'s Account of the ſpecifick Gravity of Sandſtone, *Nat. Hiſt.* of the Earth, *p.* 29. *Edit.* 2.

Figure 5- Specific Density of Samples. Source: Morton, *of Northampto shire*, p. 132.

The general conclusion that Morton draws from his experiments is that 'the Matter of the lowest Stratum has the greatest Degree of Gravity: that which lies above it has a lesser Degree'.[83] He does not venture anything in the way of a causative explanation on this occasion, contenting himself with stating the observations, and making what he sees as a factual extrapolation to the county as a whole. In this case, Morton goes beyond providing a first-hand account of how the observations came about (which, for verification, would require an individual to visit the place in question), and makes an offer to doubtful readers: 'I have now by me the Pieces on which the above-recited trials were made: And if any person doubts of the truth or accuracy of the trials, they may, if they please, make them after me.'[84] Evidently, Morton not only collected the pieces of earth to be experimented on while on tour, but looked after them beyond.

[83] Morton, *of Northampton-shire*, p. 132.

[84] Ibid.

Presumably, though I have not yet encountered proof of this, those pieces were later given to Sir Hans Sloane along with most of Morton's collections and his own annotated copy of his *of Northamptonshire*.[85]

All of the county natural historians used objects as an alternative technology of proof, collecting vast numbers of objects on their trips, from samples of rock and soil as Morton had done in the case above, to artefacts of uncertain provenance. The objects were used to assist illustrators, to provide authoritative evidence of phenomena which were either difficult to observe or rare to encounter at all, and as collectable phenomena in themselves to be circulated among the community of virtuosi. For instance in one case Plot describes a shard of flint:

> found near Leek, by my worthy friend Mr Thomas Gent, curiously jagged at the edges with such like teeth as a sickle, and otherwise wrought upon the flat… by which we may conclude, not only that these arrow and spear-heads are all artificial, whatever is pretended; but also that they had anciently some way of working of flints by the toole, which may be seen by the marks[86] (tab. 33.2)

[85] British Library, MS Sloane A 766, John Morton, The Natural History of Northamptonshire; with some account of the antiquities. To which is annex'd a transcript of Domesday-Book, so far as it relates to that county... with copious MS. notes by the author, Sept. 1712

[86] Plot, *of Stafford-shire*, pp. 396-397.

Figure 6- Shard of Flint, Plot, *of Stafford-shire*, pp. 396-7

Evidently Plot's view that the flint was a worked tool was not universally held, hence his stress on the tool-marks, which the illustration is intended to show. Whether objects were natural or artificial was a common concern, as will be explored in chapter three, and an apparently clear-cut case such as this one was relatively rare- yet even here, the speculation is reined in, with, for instance, no effort being made to discern the age of the 'ancient' artefact. The most interesting feature of this particular flint, though, is the way in which Plot uses ethnographic evidence, informing the reader: 'how they might be fasned to a helve [handle], may be seen in the Museum Ashmolean, where there are several Indian ones of the like kind, fitted up in the same order as when formerly used.'[87] In this case, in addition to the description and illustration of the flint found in Oxfordshire, a further object which Plot had seen in his capacity as keeper of the Ashmolean was used to furnish additional narrative detail concerning the flint's possible use.

Sensory experience and physical artefacts, along with reflections thereon, were at the centre of the county natural historian's practice. Aubrey in

[87] Ibid., p. 397.

particular considered himself to be strongly visual: 'if ever I had been good for anything, 'twould have been a painter, I could fancy a thing so strongly and had so clear an idea of it'[88]. The others shared this predilection to one degree or another, with Robert Plot apparently having a more audial focus, hence his work on echoes and regular comments on sound. It was reports based firmly on the senses which formed the centre of the research county natural historians conducted while on tour, with only a minor role for equipment-derived evidence and prior texts being primarily to guide the trip. While they did separate the information received into the categories, as reflected in the chapter titles of the published works and the collection of information under 'heads' in notebooks and questionnaires, the methodologies used to gather the material in question while on tour were relatively uniform. That is to say, the process of looking at something and describing it was as applicable to a geological feature as it was to an antiquity, and methodologies of experimentation were designed ad-hoc, rather than based on disciplinary principles. This is notably unlike most natural and antiquarian investigation over the following centuries, which diverged into disciplinary specialisms each with its own methodology.[89]

In some cases, though, first-hand evidence and the associated methodologies of detailed personal description were not available; and in such cases a literary technology based around the verification and authority given to

[88] John Aubrey, *Brief lives; with an introd. by Oliver Lawson Dick*. Edited by Oliver Lawson Dick (London, 1949).vol. 1, p. 43

[89] Martin Guntau, 'The natural history of the earth', in Nicholas Jardine, Emma Spary, and J. A. Secord (eds), *Cultures of Natural History* (Cambridge, 1996), p. 228.

testimony from others was utilised by the county natural historians. This is best seen in Robert Plot's work in Oxfordshire and Staffordshire. When it came to one-off occurrences, which by their nature could not be verified by Plot, this evidence was almost without exception provided by educated men, for instance in the case of 'the Worshipful Francis Wolferstan of Statfold Esquire, who riding between his own house and Clifton Campvill… about twelve at noon' saw a mock sun, an unusual but not unheard of phenomena in which a second (and sometimes third) 'sun' appears to be present in the sky, around two hours of azimuth behind the real sun. The implication of the passage was that it was Wolferstan's education and standing as a gentleman which allowed him to give this testimony to Plot; that education was central to an individual's understanding of phenomena in front of them, and thus to the reliability of what they told Plot. This fully supports the historiography which suggests gentility had a role to play in the gathering of naturalistic information, such as that by Shapin.[90]

[90] See especially: Shapin, '"A scholar and a gentleman" : the problematic identity of the scientific practitioner in early modern England', pp. 279-327; Shapin, *A social history of truth*; French, ''Ingenious & learned gentlemen' social perceptions and self-fashioning among parish elites in Essex, 1680-1740', pp. 44-66.

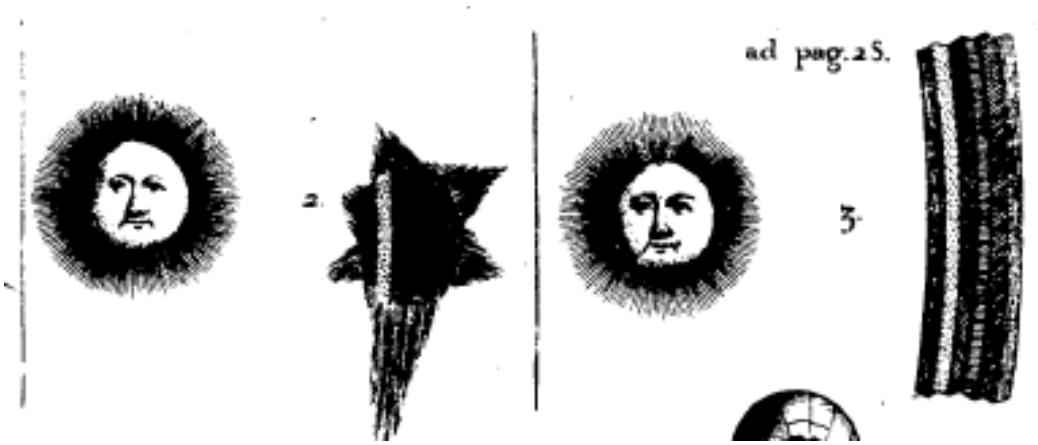


Figure 7- "Mock Sun". Source: Plot, *of Stafford-shire*, pp. 28-29.

However, there were limits to the trust with which evidence from gentleman was treated. In one particularly interesting case, experiments regarding air pressure which utilised tubes of mercury and pig's bladders full of air were 'communicated to [Leigh]… by Christopher Dauson of Langcliff in the County of Yorkshire… Any of the Curious may any Day see these, and many other Observations at the aforesaid Gentleman's House.'[91] The evidence which made the discussion worthy of inclusion in Leigh's work was the experiments and their results; readers are left to judge the veracity themselves, and if they doubt the textual evidence they can visit Mr. Dauson and gain first-hand experience. As discussed earlier, the method of inviting the reader to view for themselves was used more commonly for artefacts, physical objects (often collected), but there were also a number of experimental or specific observations for which enough detail was given for the readers to (theoretically) repeat it themselves. This,

[91] Charles Leigh, *The natural history of Lancashire, Cheshire, and the Peak in Derbyshire with an account of the British, Phoenician, Armenian, Gr. and Rom. antiquities in those parts* (Oxford, 1700), pp. 15-17.

then, was the technique Shapin first described as 'virtual witnessing':[92] the use of literary technologies to allow the reader to vicariously experience what the observer had.

In some cases the county natural historians conversed with men without formal education, particularly those whose employment brought them into regular contact with the natural world, in order to glean information regarding their experiences. Here, the influence of those such as Hartlib and Boyle, who had been following Bacon in trying to produce 'histories' of trades, was manifest.[93] Hartlib had gone so far as to propose (unsuccessfully) an Office of Address for Communication, a formal group with the explicit intention of researching useful inventions by tradespeople and spreading them for society's benefit.[94] Boyle saw taking up this project as one of the Royal Society's key roles, and indeed at least eight of the founding members of the Royal Society shared an active interest in the history of trades.[95] The important element of this work, was that it involved gathering information from tradesmen, a process which the county natural historians followed suit in. Therefore, when it came to indications of the presence, or otherwise, of lead in rocks, Charles Leigh described them 'as

[92] Shapin, 'Pump and Circumstance: Robert Boyle's Literary Technology'. Also see Shapin and Schaffer, *Leviathan and the air-pump*.

[93] Walter E. Houghton, Jr., 'The History of Trades: Its Relation to Seventeenth-Century Thought: As Seen in Bacon, Petty, Evelyn, and Boyle', *Journal of the History of Ideas* 2 no. 1 (1941); Kathleen H. Ochs, 'The Royal Society of London's History of Trades Programme: An Early Episode in Applied Science', *Notes and Records of the Royal Society of London* 39 no. 2 (1985).

[94] Charles Webster, *Samuel Hartlib and the advancement of learning* (Cambridge, 1970), pp. 1-72.

[95] Ochs, 'The Royal Society of London's History of Trades Programme: An Early Episode in Applied Science', p. 132.

the miners affirm'; regarding the quality of timber, Morton deferred to 'the Smiths of Bromicham' who made an annual journey for a particular type of Ash which was excellent 'for the Doors of Bellows'.[96] Likewise, there is a long passage in *of Staffordshire* which was the result of conversations with potters; amongst other things we are told how the clay, after being wrought, is

> set abroad to dry in fair weather, but by the fire in foul, turning them as they see occasion, which they call weaving… After the vessels are painted, they lead them, with that sort of Lead-Ore they call Smithum, which is the smallest ore of all… which gives them the gloss, but not the color… After this is done, they are carried to the Oven… where they are placed one upon another from the bottom to the top.[97]

While to us this quote perhaps most resembles interesting local miscellanea of the type often collected in histories of trades, Plot places the above information in his 'of stones' chapter; it is seen as usable testimony regarding the properties of clay itself. Similarly, miners were used as an authoritative source regarding the properties of pyrites.[98] Plot and the other county natural historians were happy to include material gathered through conversations with practical men in their work, although not to name them in the text- they were identified only by their profession, and the implication given is that these conversations were deemed verified by their multiplication. The use of skilled technicians in experiments within the Royal Society, identified only by

[96] Leigh, *of Lancashire, Cheshire, and the Peak*, p. 79; Morton, *of Northampton-shire*, p. 12.

[97] Plot, *of Stafford-shire*, pp. 123-124.

[98] Plot, *of Oxford-shire*, p. 60.

their profession, if at all, was by no means unusual as Shapin's work has shown;[99] however to trust their *knowledge* as opposed to their *skill*, as the county natural historians were doing, was a different matter.

There are also instances where evidence from those with neither specialist knowledge nor the inherent credibility of a gentleman was also included in both notebooks and completed work - though as often to ridicule as to accept. For instance Leigh, in giving different accounts of the formation of limestone, describes one as 'the County People imagine' it, before giving his opinion of the real reason for the formation in that locale.[100] Likewise, Morton gives the evidence of 'the Farmers, who are seldom very nice in distinguishing' the different terms for types of soil- though he does go on to carefully describe 'all the different Earths intended by these Terms.'[101] In some cases, though, testimony from general inhabitants does seem to have been uncritically accepted, especially when the same testimony came from multiple individuals, such as when Leigh was 'informed by several of the Neighbouring Inhabitants' regarding the presence of stalactites in mines.[102] These examples demonstrate that the county natural historians spent a good portion of their time engaged in conversation with local men of all social ranks, educated and not.

The main literary technologies utilised by county natural historians, then, centred upon the detailed description of individual experiences: some

[99] Shapin, 'The House of Experiment in Seventeenth-Century England', pp. 383-388.

[100] Leigh, *of Lancashire, Cheshire, and the Peak*, p. 55.

[101] Morton, *of Northampton-shire*, pp. 36-44.

[102] Leigh, *of Lancashire, Cheshire, and the Peak*, p. 69.

relayed by verified testimony, but most observed personally on extensive research trips. Aubrey, writing to his friend Anthony Wood in 1673, reflects on his research into the natural history of Surrey: 'I have taken a great deal of pains, but with a great delight'; exemplifying the sense of achievement he, like his peers, felt on pressing through the hardships of touring to collect information.[103] Assessing this information, when it came to the publication of finished or the sharing of manuscript local natural histories, was complex: the word of a gentleman was trusted, but not when it conflicted with personal observations; collected objects were listed and the circumstances of their discovery described; experimentation was carried out, but the focus was on the specific nature of each experiment. All of these literary technologies took place after the trip, when back in the study compiling notes. The main priority for the county natural historians while actually journeying through their respective counties, was to record all the information given to them, along with its source, for later perusal before compilation. This was an encyclopaedic endeavour on a huge scale, as reflected by the volume collected, for instance seen in Aubrey's posthumously published *History of Surrey* stretching to five volumes.

Editing, Illustration, and Textual References

One of the reasons that Aubrey's *Of Surrey*, like Johnston's Yorkshire collections, were so voluminous is that the author did not edit the piece for publication as a county natural history. Part of the editing process, as can be seen from Plot and

[103] Bodleian Library, MS Wood F 39- Letters to Wood, John Aubrey to Anthony Wood, 16 September 1673, f. 223.

Morton's work in particular, was the removal of extraneous information, a large quantity of which was collected due to the interest of the authors, but not considered part of a local natural history. The primary limiting factor in terms of what the authors considered suitable for publication in a local natural history was what we might term a literal interpretation of nature. These works, despite their occasional foray into the invisible and non-sensible, were intensely focused upon physical nature and its various manifestations. In earlier and particularly continental natural histories there had been more stress laid upon the emblematic and/or symbolic importance of 'natural' objects; Conrad Gessner (1516-1565), for instance, included folktales, myths and legends alongside the name and physical characteristics of an animal, illustrating the complex symbolic relationships between nature and man.[104] Natural objects co-existed with symbols and emblems in intricate synergy, a view that continued to hold sway through the first half of the seventeenth century, before beginning to decline with the work of Francis Bacon and his division of the world into the natural, the artificial, and the preternatural.[105] Thus, given the Baconian roots of the county natural history, local folkloric tales, unverifiable stories and speculation regarding the meanings of objects, along with much else, were excluded from completed

[104] William B. Jr. Ashworth, 'Emblematic natural history of the Renaissance', in Nicholas Jardine, Emma Spary, and J. A. Secord (eds), *Cultures of Natural History* (Cambridge, 1996), pp. 20-21.

[105] Katharine Park and Lorraine Daston, 'Unnatural conceptions: the study of monsters in sixteenth- and seventeenth-century France and England', *Past & present* no. 92 (1981), p. 43; Ashworth, 'Natural History and the Emblematic World View', pp. 305-316.

manuscript and printed county natural histories, despite being of considerable interest to the authors in other fields of their research.[106]

"History" as we would understand it, or civil history, to use the contemporary term, was also excluded. By its very nature civil history had already been recorded, so while the county natural historians were sympathetic of efforts to maintain the records though republishing manuscripts, and demonstrated their interest in this area elsewhere, there was little room for the history of the people in their published works. What civil history was included amounted to little more than transcripts of other works, for instance Morton annexed a transcript of the Domesday Book relating to Northamptonshire to his work. Likewise, Aubrey compiled a list of the sheriffs of Surrey that was included in the posthumously published version, though we have no way of knowing if it would have been in Aubrey's own conception of a printable county natural history.[107] In both cases, the fear driving their inclusion was the loss or inaccessibility of the original records, which Aubrey justified in his *Brief lives*:

> Men think, because every body remembers a memorable accident shortly after 'tis done, 'twill never be forgotten, which for want of registering, at last is drowned in oblivion… Which reflection has been a hint, that by any means many antiquities have been rescued, and preserved (I myself now inclining to be ancient)- or else utterly lost and forgotten[108]

[106] See for instance Aubrey, *Miscellanies*.

[107] Aubrey, *of the County of Surrey*.vol. 1, pp. xxv-xliii; Morton, *of Northampton-shire*.Appendix, 'A transcript of Domesday-Book, so far as it concerns Northamptonshire'

[108] Aubrey, *of the County of Surrey*.vol. 1, p. 18

The preserved descriptions and illustrations were gathered together in the format of an encyclopaedia, taking inspiration from the famous *Naturalis Historia* written by the Roman naturalist Pliny the Elder in 77-79 AD. Translated into English by Philemon Holland in 1603 as *the Natural History of the World*, this work was seen through the seventeenth century as the epitome of ancient knowledge regarding the natural world, and as Chapter Three will discuss, a model to be emulated, added to, and perhaps superseded. Plot himself, in his earliest writings regarding the possibility of raising subscriptions for a 'descriptive survey of England', called on Pliny as the model to follow when writing natural history.[109] However, despite this, Plot did not simply inherit the structure of Pliny's work.

Much of Pliny's work, especially in the early geographical books, focused upon the wider world explicitly and were therefore seen as irrelevant to county natural history. And throughout *Naturalis Historia*, Pliny's focus was upon the collection of a comprehensive and massive catalogue of knowledge, rather than the collection of information regarding a single locale. However, the lines he drew between subjects were largely inherited- for instance Pliny's book 36 on "Stones" is explicitly mirrored in Plot's chapter Two "of stones", including regarding the internal structure, the order in which types of stones are treated.

While some aspects of the organisation of county natural histories were directly inherited from Pliny, the inclusion of antiquities was a marked

[109] Dr. Plot to the Reverend Dr. John Fell, c. 1673, in R. T. Gunther (ed.), *Early science in Oxford. Vol. 12, Dr. Plot and the Correspondence of the Philosophical Society of Oxford* (Oxford, 1939), p. 337.

difference. Here, Plot turned to Francis Bacon for evidence of the theoretical plausibility of such inclusion. As Plot paraphrased, Bacon considered man-made objects to be simply nature 'restrained, forced, fashioned, or determined, by Artificial Operations… not differing from those of *Nature* in *form* and *essence,* but in the *efficient* only'.[110] We might also remark, as Chapter One discussed, that the inclusion of antiquities was a useful cultural tool in the solicitation of patronage, given the prior examples of Camden, Leland and Dugdale among others who could be called upon. With all of the material discussed, the intent when dealing with all subject matter was the same: description and preservation.

The chief method through which antiquities and the natural world were preserved was through textual description and the collection of objects, but visual illustration, to which we will now turn, also played an important role. Each of the authors of printed works, as well as Aubrey in his manuscripts, were reliant upon a process of collaboration in order to produce the images, with much of the illustrative work taking place after the tours on which objects had been found. The objects were sent to illustrators who then provided the 'cut' copper plates for the printers, with a varying degree of authorial oversight. The relationship between author and illustrator was therefore vitally important, and it was only Aubrey who dealt with multiple illustrators, probably because he was commissioning individual plates, for instance of Osney Abbey as discussed in chapter one, rather than a series of plates to adorn a printed work. Aubrey also had the advantage of being a reasonable artist in his own right, although this skill

[110] Plot, *Of Oxfordshire*, p. 1.

was only really utilised in regard to his home at Easton-Pierce, which he depicted in a series of watercolours.[111] Even if this was not used, a skill in illustration and interests in the techniques utilised would have been of considerable benefit when commissioning others.

Plot, whose manuscript notes contain little in the way of illustration by his own hand, used the Dutch engraver Michael Burghers (1647/8-1727) to cut all of his copper places for *of Staffordshire*, which remain today in the William Salt archive in Stafford. Each plate is clearly numbered as a table, and contains an instruction to the printer as to where the print should be inserted into the finished work. As you can see below, the illustrations themselves are of a good quality, depicting the objects involved with a clear shading to give a sense of depth, which was the main advantage of copper plates over the formerly popular and cheaper woodcuts. There is no scale or indication of size on the illustration, though even in the case of these unknown animals the text makes comparisons with better-known counterparts to enable readers to estimate size for themselves. The dedication on this plate reads: 'To the right worsp. the generous & much hon^{d} Gent. S^{r}. Henry Gough of Perry-Hall Kt. This 22 Tab. consisting chiefly of undescribed Animals with all inmaginable deference is gratefully dedicated by R. P. L. L. D.' Gough, who had been knighted by Charles II in recognition of his grandfather's loyalty to Charles I, 'was called one of the finest gentlemen of his time, and maintained a style of hospitality and elegance in his

[111] See Bodleian Library, MS Aubrey 17, John Aubrey, Prospects of Easton Pierce,

mode of living';[112] he was a patron of Plot's who had subscribed to cover the cost of the plate, and a similar dedication endorsed each and every plate Plot commissioned.

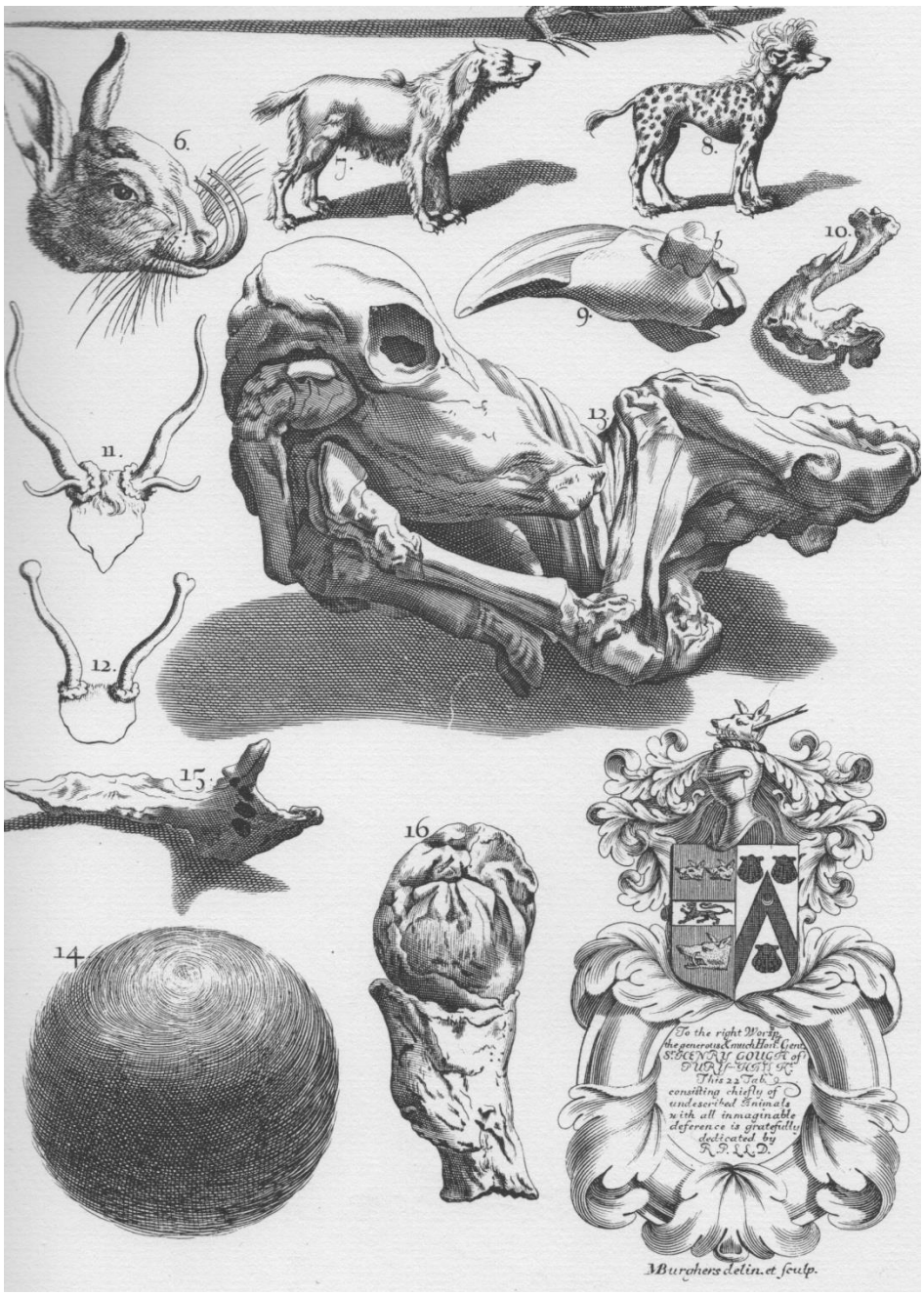


Figure 8- Table 22. Source: *of Staffordshire*, pp. 266-7

[112] J. Nichols, *Illustrations of the Literary History of the Eighteenth Century* (London, 1818), p. 233.

This type of illustration, with plates combining images of several objects found while on tour, was the most commonly used style in published county natural histories. When we turn to Plot's depiction of the houses of local gentry in Staffordshire and Oxfordshire, though, the illustrations are markedly different. Here, the entire vista presented to the reader was designed to present a positive view of the gentleman whose seat it showed, unsurprisingly given that they were paid for by the owner of the house. Indeed, Swann concluded that 'Plot's accounts of Baconian particulars often seem no more than convenient excuses to include more grand homes within the bounds of his book.'[113] Swann argues that the country house was central to the entire project for Plot, which I hope this thesis will disprove. But, she was right to point to the importance of the illustrations of country houses as part of a wider discourse in the period, with gentry increasingly representing their identity through their houses rather than the extent of their lands.[114] The example below, of Walter Chetwyn's Ingestre Hall, is introduced as 'in Testimony to his many and singular favours' as part of the ornate dedication.

[113] Swann, *Curiosities and Texts*, p. 139.

[114] Ibid., pp. 134-148.

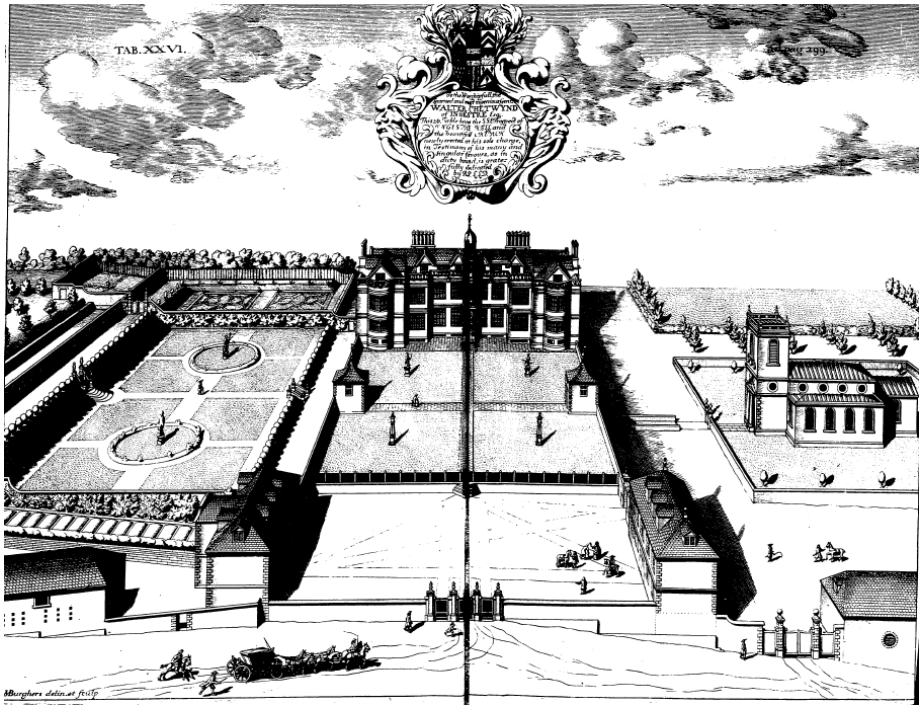


Figure 9- Ingestre Hall. Source: Plot, *Of Staffordshire*, pp. 298-9

The plates used in Morton's *Natural History of Northamptonshire* are styled similarly to those used in Plot's work. In his third chapter, Morton gives an account of sea-shells found buried in the earth within the county, some of which were found whole, but in other cases all that was discovered was a body 'Sand, Spar, &. that were originally *formed* in the *Cavities* of the like *Shells* as in a Mould, and have taken the Figures of them.' The image below follows a description, over several pages, of bivalve and turbinated shells found in the county, along with in most cases a discussion of the circumstances in which they were found. To give an indication of the type of textual description I am referring to here, two reasonably representative, though shorter than average, paragraphs from the text related to this image are:

> A Trochus of Four Wreaths finely striated in a Spiral Manner as the former are. The Length an Inch and half: the Circumfrence Two. Each of its Wreaths

rise up into a sharp Ridge. I found it in a Stone-Pit at *Burton*. Its Cavity fill'd up with Limestone. (Fig 28)

the Trochus Heterostrophus, i.e. having the Turn, or Convolution of it quite contrary to that of the generality of other Shells. It has Three Wreaths, and appears to be naturally smooth. (Fig 32)[115]

Figure 10- Shells. Source: Morton, *of Northamptonshire*, pp. 220-21.

Each of the items illustrated is referenced in a side-note at the appropriate point in the text, and side-notes are further used to refer to illustrations available to the reader elsewhere, for instance in books such as Lister's *Animalium*, Plot's *of Oxfordshire* or Lhwyd's *Lithophylacii Britannici*. The

[115] Morton, *of Northampton-shire*, p. 220.

plate from which the print was created, as with all the prints in the work, was engraved by Michael Vandergucht (1660-1725), a Flemish engraver who worked on several natural histories of the period (including Sloane's *Natural History of Jamaica*), and was known as one of the best in his field. As Morton informs us in the preface, Vandergucht 'has done his Part with due Care. Only there is an Error, that was committed unawares, as to the Turbinated Fossil Shells; which is, that the Convolutions of all of them, excepting that Tab. 7. Fig. 32. are from the Right Hand to the Left; whereas they should have the contrary turn.' Given that the copper plate "prints" onto the paper in a mirror-image such an error is easily explicable- either Vandergucht forgot to mirror each item in the preparation of the plate, or the printer forgot to reverse it. This emphasises a particular problem of the relationships between illustrator, printer and author, that of distance, as is shown by the fact Morton did not have direct oversight of this part of the process, and was also found by Charles Leigh: 'some of the plates which are figured twice over, but those being wrought off while [Leigh] was in Oxford, the error could not be rectified.'[116]

Leigh's use of illustrations is particularly interesting- his tables, rather than being inserted within the text, as was the case in Plot and Morton's work, are at the end, each with a clear 'explanation of the cuts' in which the illustrations are each addressed in some detail. At the end of the plates he thanks 'the persons who shared with me the fatigues I had in the explications of

[116] Leigh, *of Lancashire, Cheshire, and the Peak*.'the epistle to the candid reader'

them',[117] people who had aided Leigh by finding and supplying appropriate texts, as well as providing many of the antiquities for illustration. Each of the men named also appears in the list of subscribers at the start of the volume. Here, unusually among county natural historians, Leigh used the illustrations as objects in themselves, rather than as illustrations adding detail to the textual descriptions elsewhere; the explications give additional information to the image, rather than the image giving extra information to the text. Leigh finds this particularly useful for collected antiquities:

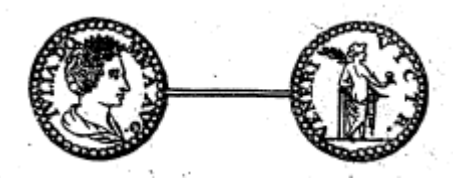


Figure 11- Coins. Source: Leigh, *of Lancashire*, vol. 3, p. 109.

> the First Head is that of *Julia Domna*, who was likewise styled *Augusta*. On the Reverse are the Letters VENERI VICTR. The Figure is *Venus* half named, in her Left-Hand holding the Branch of a Palm, in her Right-Hand a Globe, and with her Left-Arm leaning upon a Pillar.[118]

In addition to using illustrations to add detail to the narrative accounts within finished county natural histories, textual sources were mobilised throughout both to provide information and as what we might term rhetorical backup. The methods by which these sources were used are clearest in Morton's *Natural History of Northamptonshire* (1712). The side-notes in this work are inconsistently presented, containing many abbreviated titles, omitting authors

[117] Ibid.vol. 1, p. 111

[118] Ibid.vol. 3, p. 108

(especially when an author has been referred to before, but again, inconsistently so) and regularly moving between "see" and the latin "vid" with no apparent meaning as regards subject matter or the type of text being referenced. However, compared to other work by his contemporaries, Morton's notes are fantastically detailed- pages or sections are cited on nearly all occasions, for regularly-printed works the edition consulted is specified, and the location of manuscripts is often given. Between this and his notebooks I have been able to reconstruct the majority of a library containing:

> the Numerous Books that were to be consulted and perus'd; many of which were not to be procur'd without great Difficulty, and from very different Parts, both at home and abroad.[119]

The most striking aspect is the sheer volume of references to Robert Plot's work, which is by far the most commonly cited. As far as I have been able to ascertain, there was no direct personal relationship between the two naturalists: Plot left Oxford in 1690, a year before Morton graduated from Cambridge and moved between the two universities. I have uncovered no correspondence between the two, nor found any references to any such conversations or correspondence in other letters. However, references to Plot's work appear regularly in each chapter, used generally as a comparison for or an illustration of the things which Morton was describing. So, for example, Morton references the 'Iron-mounds' which Plot found in Oxfordshire, the description of

[119] Morton, *of Northampton-shire*.'preface'

which closely matched some 'cylindric pyrites' which Morton came across.[120] Likewise, where an 'oyster-shell' was found in Northamptonshire which closely matched one illustrated in Plot's work, a reference is given to the table and figure, allowing the reader to "see" this particular shell without adding another illustration to the cost of producing the work.[121] However, while Plot's text could confirm Morton's observations, it is clear that observations took epistemological priority. As a result, Morton corrected Plot on several occasions, such as over his attribution of the source of the River Ouse to Fritwell in Oxfordshire.[122] In many ways, Morton's use of Plot is analogous to Plot's own use of Camden and other prior chorographers, discussed above. Despite the clear modelling of Morton's work on Plot's, Plot is never invoked in the printed work as a methodological backup, or as an explicit precedent demonstrating the value of his work.

The only author whose name is consistently referenced in a methodological and/or theoretical manner is John Woodward (1665/8-1728). As Morton reports in the preface of his work, as part of his research he was in 'correspondence with other Persons, the most Eminent in Natural Learning: and particularly with Dr. Woodward, Professor of Physick in Gresham-College'.[123] Woodward was a fellow natural historian, antiquary, and member of the Royal Society, with a particular interest in fossils. His *Essay toward a Natural History of the Earth* (1695) argued that the fossils were once living creatures destroyed by

[120] Ibid., p. 169.

[121] Ibid., p. 128.

[122] Ibid., p. 6.

[123] Ibid., 'preface'.

the biblical flood, a position which caused much friction between his supporters (including Morton) and opponents such as Edward Lhwyd, Martin Lister and John Ray.[124] Morton, in *of Northamptonshire*, largely side-steps the debate and at no point refers to the opposing point of view, instead making his own position clear in his classification of all 'seashells and other extraneous bodies buried in the Earth' together in chapter three. He also ventures his support for Dr. Woodward's 'ingenously and rationally drawn… inference' that the agitation of the sea by tides caused the wearing of shells, including those which were clearly, from their position far inland, there 'before the General Deluge'.[125] *Of the Earth* is cited extensively in the side-notes to confirm the possibility of a wide range of phenomena, most of which are far less controversial than this one.

The standard antiquarian texts, such as William Camden's *Britannia* and Thomas Fuller's (1608-1661) *The Worthies of England* (1662), were evidently both used in the planning of research and cited regularly as valued sources by Morton as with the other county natural historians: in the case of places that were not personally visited, information from Camden or Fuller is simply inserted into the text. However at the same time, Morton regularly criticises the accuracy of the texts, suggesting they use an overly rhetorical tone, for instance when he tells us that Camden refers to a hill in Northamptonshire being 'the Heart of England, by a Metaphor that admits not a close Examination.'[126] This example of

[124] John Ray from a correspondence with Mr. Edward Lhwyd on April 8 1695 in R. T. Gunther (ed.), *Further correspondence of John Ray* (London, 1928), p. 288.

[125] Morton, *of Northampton-shire*, p. 191.

[126] Ibid., p. 1.

Morton critiquing and suggesting an improvement to Camden's work is in the first paragraph of the first chapter, immediately alerting the reader that, while Morton does value the evidence of luminaries in his field such as Camden highly enough to cite it, he does not revere it and has no qualm with stating his disagreements, particularly when his side of the argument is supported by personal observation. In other cases Morton updates, rather than corrects, Camden, for instance regarding the drainage of the Fens, which had occurred since Camden wrote, giving them 'a much different Constitution and Character'.[127] The intention Morton had of bringing older texts up to date, though, is best demonstrated with a quote in relation to Fuller:

> In Mr. Fuller's time, it seems, [wool manufacturing] was attempted in this county with great application, yet came to nothing. However that be, the attempts, that have been made this way of late years, have really been attended with so great success, and this manufacture has taken so good footing in the county[128]

Below Woodward, Plot and the antiquarians, in terms of regularity of reference in Morton's work, came the geographical dictionaries. These were treated and used in much the same way as Camden and Fuller, except with a clear connection to county pride, as many of the points referred to were used in a comparative manner rather than referencing local information. So for instance, Jeremy Collier's (1650-1726) dictionary, under Northamptonshire, observes that

[127] Ibid., p. 8.

[128] Leigh, *of Lancashire, Cheshire, and the Peak*, vol. 1, p. 17.

there are more parks in Northamptonshire than any other county;[129] and Mr Speed's description of England observes that no other county is better stored with grain.[130] Both of these observations, which support Morton's proud arguments regarding the primacy of his own county, are reported as evidence in themselves. However, Edmund Bohun (1645-1699), whose geographical dictionary asserts that the River Ouse begins in Hertfordshire,[131] is "corrected" after Morton traces the river into Northamptonshire. The geographical dictionaries, it appears, were resources to be utilised by Morton in support of arguments put forward which supported the pride he felt in his county, and also corrected when they portrayed a more negative view of the county.

Morton's textual sources, with the exception of the controversial Woodward, a regard for whom he shared only with Robinson and Plot, were entirely typical of those used by the other county natural historians. Especially noteworthy was their shared appreciation for and use of the antiquarian and chorographic texts which had proliferated through the sixteenth and early seventeenth centuries. Regular references to Camden, Speed, and other authors of previous generations, as well as enabling the thorough planning of journeys and providing evidence themselves, served a more practical function for the county natural historians; they were vital, particularly for Plot and Aubrey, in the solicitation of patronage, as discussed in Chapter one. In a letter I have quoted

[129] Morton, *of Northampton-shire*, p. 12.

[130] Ibid., p. 16.

[131] Ibid., p. 6.

from previously in which Plot was approaching his future patrons in Oxfordshire, he based his case partly around rectifying the defects he found in Sir Henry Spelman's (1563/4-1641) 'Villare Anglicanum', a gazetteer which according to a Preface added by John Aubrey, dated 31 October, 1687, was 'made by the appointment of Sir Henry Spelman, out of Speed's Mappes'.[132] Correcting the errors of well-respected and widely read prior texts, then, was both a means of soliciting patronage and of providing a structure to journeys through the countryside.

The main use of Camden in particular by Plot and the other county natural historians, was the incorporation of his work as evidence into manuscript and finished text, just as Camden himself had incorporated earlier research by Leland, as well as substantial materials from the library of Sir Robert Cotton.[133] This was in many ways a bi-directional process; as through the incorporation of much of the work of county natural historians and other local topographers and antiquarians Camden's *Britannia* itself was expanded over the course of the century to Thomas Cox's (1655/6-1734) *Magna* edition (1720) which stretched to 4,500 pages in six volumes.[134] Until this mammoth compilation Camden's work was largely an overview for most of the counties which local historians were interested in. It was much less detailed than, for instance, the work of Lambarde

[132] Bodleian Library, MS Aubrey 5, John Aubrey, An Interpretation of Villare Anglicanum, f. 19.

[133] Richard L. DeMolen, 'The Library of William Camden', *Proceedings of the American Philosophical Society* 128 no. 4 (1984); Richard L. DeMolen, *The library of William Camden : secretary-treasurer, Erasmus of Rotterdam Society* ([S.l.], 1984); Sharpe, *Sir Robert Cotton, 1586-1631 : history and politics in early modern England*, pp. 20, 91.

[134] Cox, *Magna Britannia*.

regarding Kent that was referred to by Browne and Plot, or the work of Dugdale in Oxfordshire which was used by Plot, but still provided an admirable basis for research and, importantly, comparative evidence from elsewhere in the country. Hence, through both notebooks and the produced works it is Camden who appears most often.

Conclusion

Camden and other pre-Civil War antiquarians, as discussed earlier in the chapter, had an influence on several aspects of the planning of local natural historical research trips. The "Roman way" which Plot and Browne followed in 1693 had itself, for instance, been described in the transcription requested by Camden of the fifteen main routes across Britain, the Antonine itineraries.[135] So the direction of travel was in this case almost entirely dictated by an earlier work, as were the excursions to (attempt to) find Danish encampments and Swanscombe castle, along with the more successful location of the chalk pits. With larger-scale research projects, and especially the publication thereof, the mention of previous antiquarians was also important in the solicitation of patronage. In addition to the use of texts, social networks were mobilised to gather information, solicit patronage, and secure introductions to the gentry of the county being studied. A county natural historical trip, then, required significant

[135] Vine, *In defiance of time*, p. 81.

planning and was far from the professed 'random perambulation' of earlier chorographers and antiquarians.[136]

While on the research trips themselves, this chapter has discussed four types of practice which were undertaken: conversation with locals, personal observation, (limited) experimentation and the collection of objects. When it came to conversations with locals, we have seen that gentlemanly evidence was worth more than that from an uneducated man, though those with professions which brought them into contact with the natural world were also trusted by virtue of their job, as long as the testimony from a number of the individuals agreed. Status counted, and evidence from locals who were not known for their credibility required confirmation by the county natural historians, an example of this being the chalk pits found half a mile away from where Lambarde identified them, thanks to a local resident John Lowe, before being confirmed and described in detail. Personal observations such as this were associated with a, sometimes implied, narrative to enable the reader to vicariously witness the scene. This narrative focus also carried through to experimentation, with Plot's work on echoes providing an example of how county natural historians dealt with both the general, in cases where a simple theorem could be supported, and the specific, which was the main focal point of the county natural history, simultaneously.

Each of these practices bled into what Aubrey called 'The searching into Natural knowledge';[137] the methodologies were not discipline specific, with the

[136] Kenyon, *The history men*, p. 16.

exception of the precise form of experimentation undertaken. And many of the practices of the county natural historians continued to be used well into the eighteenth century, though in very different disciplinary contexts. To take the example of questionnaires, while their use for natural historical research declined markedly, there was a continuation in their use for antiquarian research where mapping particular instances remained popular. For instance, William Wake (Bishop of Lincoln) used printed sheets to collect information about monuments and antiquities alongside the information normally collected in church visitations, and a raft of demographic information from 1704-16. Indeed his successor, Edmund Gibson, saw this practice as 'of such great and apparent use' that he continued it, and was instrumental in its extension through the country by the mid-eighteenth century. As a further example, Richard Rawlinson toured with a set of enquiries addressed *To the Reverend the Clergy and Gentlemen of the County of Oxford*, enquiring into a wide range of social and cultural information, but without the naturalistic interest of county natural historians. This was part of his effort to provide a new, and complete, topographic survey of the county, superseding the work of Plot (whose natural history of the county he had paid five shillings for),[138] but with only partial success.[139]

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[137] Aubrey, *The Natural History of Wiltshire*, 'preface', p. 5.

[138] MS Rawl. J. quarto 31, f. 5. Cited in Rawlinson, *A proposed history of Oxfordshire, 1715-1720*, p. 59.

[139] Fox, 'Printed questionnaires, research networks, and the discovery of the British Isles, 1650-1800', pp. 616-619.

Likewise, the 'clerical naturalists' of the mid-eighteenth century who kept weather calendars demonstrate the continuing importance of personal narrative in meteorology. As Jankovic has recently argued, 'keepers of these calendars committed themselves to recording *specific, important,* and *local* natural events in the annual cycle.'[140] As in the county natural histories, these clerical naturalists and their correspondents found the *where* key in their reporting: it was the fact they were embedded in a locale that made their reports authoritative. Jankovic's *Reading the Skies* (2000) gives a cultural history of meteorology from 1650-1820 which Livingstone incisively described as a 'social history of the shift from particularity to generality, from the marvellous to the customary, from the prodigious to the periodic, from the local to the global.'[141] What this chapter has done, I hope, is to give the reader a sense of how the methods of the county natural historians were able to focus on the particular, marvellous, prodigious and local in virtually all topical areas concerning a county. By using a transferable methodology of description, antiquities naturally fall alongside rocks, trades alongside waters: 'natural knowledge' encompasses them all.

[140] Vladimir Jankovic, *Reading the skies : a cultural history of English weather, 1650-1820* (Chicago, 2001), p. 116.

[141] David N. Livingstone, 'Review of Jankovic, Reading the Skies: a Cultural History of English Weather, 1650–1820', *History Workshop Journal* 54 no. 1 (2002), p. 237.

Chapter Three: 'Faithful Representation'

This chapter turns to historical epistemology to investigate the works produced by the county natural historians. It seeks to demonstrate that the County natural historians utilized a specific style of empiricism that I shall label 'faithful representation', or 'fidelity'. Fidelity, for our purposes, has a twin definition. Firstly, 'Strict conformity to truth or fact… 'of persons: honesty, truthfulness, trustworthiness, veracity… of a description… correspondence with the original; exactness'. Secondly: 'the quality of being faithful; faithfulness, loyalty, unswerving allegiance'. Both of these definitions were also current in the seventeenth century.[1] So, in my reference to faithful representation and/or fidelity, I am implying both that the County natural historians attempted to the best of their ability to describe or represent objects exactly, and that they did so in demonstration of their faith, in this case to God. The explicitly religious connotations of the county natural historians' work will be discussed in the next chapter, while this turns to the cultural implications of the epistemic concepts which underpinned the production of knowledge in the latter seventeenth century, particularly as regards our current understanding of the 'use' of natural knowledge in the late seventeenth and early eighteenth centuries.

Investigations of natural knowledge in the late seventeenth century have been presented by historians primarily in two interrelated ways. Firstly, it has been presented as primarily utilitarian by historians such as John Henry, who

[1] '"fidelity, n."', *Oxford English Dictionary*, <http://www.oed.com/view/Entry/69888?redirectedFrom=fidelity> (3 Aug).

have particularly drawn upon the example of Francis Bacon. Henry argues that knowledge in the seventeenth-century increasingly came to concern how nature could be used to improve human life, or at least to wield earthly power. The aim of the seventeenth century naturalist was to find how 'knowledge of nature should be turned to the benefit of mankind'[2] through the empirical investigation of nature, with inductive reasoning then being used to provide a theory for why it works. The undoubted utilitarian focus in Bacon's work has led some to link methodologies derived from his work with the exploitation of nature, or in the feminist historian Caroline Merchant's evocative phrase the 'rape' of nature.[3] Henry convincingly casts this view aside,[4] while still focusing closely on the governance of nature by Bacon and his successors. However, both Merchant and Henry agree that the central focus of knowledge in the latter seventeenth century was the use of nature for human ends.

Secondly, the intentions underpinning natural knowledge are understood in relation to scientific or philosophical theory. Mary Poovey, in her *A History of the Modern Fact*, argues that, from the seventeenth century, nuggets of information only became 'modern facts' when they were used as evidence to prove a general theory about the natural world.[5] That is to say that, for Poovey, the system of knowledge which emerged in the seventeenth century consisted of

[2] Henry, *The scientific revolution and the origins of modern science*, p. 8.

[3] Carolyn Merchant, *The death of nature : women, ecology, and the scientific revolution* (San Francisco, 1980), p. 171 for example.

[4] Henry, *The scientific revolution and the origins of modern science*, chap 12: 'extending the empire of man? Bacon, the Law and Mother Nature', pp. 133-140.

[5] Poovey, *A History Of The Modern Fact*, pp. 9-13.

both particulars and systematic claims, but that particulars can only be considered as modern facts if they provided 'evidence of some theory'. These theories could range from natural philosophical conclusions about the laws of nature, to political economy, all of which constituted generalisations from the particulars concerned.[6] This is the intention of natural knowledge which has been discussed, or assumed, by most works of historical epistemology.

The implications of Poovey's interpretations of natural knowledge for early modern natural history are best drawn out by Richard Yeo's study of eighteenth-century encyclopaedias, in which he demonstrates that the place of natural history was to provide the descriptions from which useful facts could be selected.[7] Natural history, then, was intended to provide an authoritative source of information for others to use, whether in utilitarian, or natural philosophical, frames.[8] As such, its primary knowledge-producing goal was to provide basic information, ideally in a manner which was free of theorising in itself, presented in a way which could be reorganised by the natural philosophers to suit their own theoretical investigations.[9] As Poovey defined it herself when distinguishing

[6] Ibid., p. 9.

[7] Richard Yeo, *Encyclopaedic visions : scientific dictionaries and enlightenment culture* (Cambridge, 2001), p. 64.

[8] Yeo cites, for instance, Bacon's *Novum organum:* 'a store of natural history and experience as is required for the work of understanding, or of philosophy' in Richard Yeo, 'Between Memory and Paperbooks: Baconianism and Natural History in Seventeenth-Century England', *History of Science* 45 (2007), p. 8.

[9] Shapin, *The scientific revolution*, p. 32; Cook, 'The Cutting Edge of a Revolution? Medicine and Natural History near the shores of the North Sea', pp. 59-60.

natural historical study from the topics of her work, 'natural historians... *did* collect deracinated particulars'.[10]

However, more recent work has questioned whether deracinated particulars, that is, particular bits of knowledge stripped of theoretical content, even exist. To give a recent example, in *Objectivity* Lorraine Daston and Peter Galison discuss a similar conception of "fact-hood" through the idea of epistemic virtues. An epistemic virtue, in their formulation, is an ethical code adhered to by those investigating the natural world, a set of norms which were 'internalised and enforced by appeal to ethical values'.[11] For Daston and Galison, each age has a predominant, though not exclusive, epistemic virtue attached to the practice of science. "Truth-to-nature" is identified as the mainstream epistemic virtue of natural knowledge from the latter eighteenth century, the first period they investigate in *Objectivity*. Daston and Galison argue, using examples such as the famous Swedish naturalist Carl Linnaeus (1707-1778), that the central goal of the study of nature in the latter eighteenth century was the production of 'idealised, perfected, or at least characteristic exemplar[s] of a species or other natural kind'.[12] In other words, for Linnaeus and other practitioners of "truth-to-nature", the goal of empiricism was to produce generalizable exemplars.

This assumption that natural historians collected particulars devoid of any theoretical input or wider meaning has also been called into question by

[10] Poovey, *A History Of The Modern Fact*, p. 9.

[11] Daston and Galison, *Objectivity*, p. 40.

[12] Ibid., p. 42.

recent cultural historians. For instance, Alexandra Walsham, in *The Reformation of the Landscape*, demonstrates convincingly that religion profoundly affected contemporary perceptions of the landscape and relics from the past. Jan Broadway, in *'No historie so meete'*, demonstrates and discusses the significance of local history within gentry culture prior to 1660. Leah Knight, in *Of Books and Botany in Early Modern England*, focuses upon the metaphorical and cultural relationship between plants and text through the sixteenth century. Along with a range of other work,[13] all demonstrate that natural history, and other ostensibly empirical disciplines, were used for much more than the production of 'modern facts'. Together, I argue, they constitute a cultural interpretation of empiricism, which discusses the wider meaning and implications of the empirical investigation of nature. However, natural history in latter seventeenth century England has not been directly reassessed in light of this new cultural understanding of empiricism, nor indeed in light of Daston / Galison's *Objectivity* and other recent works of historical epistemology that enquire into the virtues of empirical practices. Given the central place of natural history in most narratives of the Scientific Revolution written since the 1980s this is a surprising omission, and one which this chapter will begin to rectify by looking at county natural histories and their authors.

While natural history in the mid-to-late seventeenth-century *was* a storehouse of knowledge to be plundered, it was also used for more than this. The aim of the county natural historians was not to provide examples of well

[13] For example: Cooper, *Inventing the Indigenous*; Vine, *In defiance of time*.

known axioms (the "Aristotelian fact"), nor to provide data for generalisation by natural philosophers (the "modern fact"), nor indeed to produce catalogues of deracinated particulars; it was to provide historical, descriptive and above all *local* knowledge which was culturally meaningful in itself. The knowledge produced in county natural history was based upon a particular conception of curiosity and preservation as morally good, and inherently assumed God's place as the creator and author of the natural world. As previous studies have demonstrated, the Aristotelian and Modern types of fact co-existed through the latter seventeenth century;[14] this chapter will demonstrate the co-existence and properties of an alternative epistemological category utilised by county natural historians, that of fidelity.

One of the aspects of fidelity with which this chapter engages throughout is that of locality. In addition to the social networks of patronage discussed in Chapter One, which encouraged a local focus, there was also an epistemological correlate for locality put forward by the county natural historians. Rather than making generalizable claims in their work, they only claimed to faithfully represent what was before them within the county: this was *local* knowledge of a specific place, and presented as such. In part, this was due to the sheer breadth of their topical coverage: combining what we now refer to as archaeology, botany, cartography, genealogy, geology, heraldry, medicine, mineralogy, and many other fields of interest. As has been discussed by Blair and Yeo, the "problem" of polymathy was not confined to latter seventeenth century

[14] Poovey, *A History Of The Modern Fact*, pp. 7-15.

England, and responses to it varied.[15] Perhaps the most regular, and certainly common as the eighteenth century progressed, was to specialise topically rather than even attempt polymathic knowledge. This allowed a depth of knowledge and left space for generalisations in works produced, as the example of John Ray will attest. The response of the county natural historians, though, was to localise one's study both in terms of the area covered and the epistemological claims attached to the work produced.

This chapter addresses these issues of epistemology and locality within a chronological framework, firstly discussing the styles of empiricism employed by antiquarians such as Camden, who directly influenced the county natural historians, and practitioners of *historia* in Europe who have been the subject of recent fruitful historiography for comparison. I then discuss what John Aubrey called 'the improvement of knowledge', asking to what extent his view, which was shared by many contemporaries, of a revolutionary shift in the basis of knowledge after 1649 was accurate, and what he and his peers saw as the epistemological changes underway. After situating this in historiographic context, the chapter turns to the style of empiricism undertaken by county natural historians, which I term "faithful empiricism", arguing that while this was focused upon the reporting of sensory and narrative knowledge of individual particulars, it was not intended as a contribution to the new natural philosophy. Instead, it was an expression of the culture of curiosity in which it emerged,

[15] Yeo, 'A Solution to the Multitude of Books: Ephraim Chambers's *Cyclopaedia* (1728) as "the Best Book in the Universe"'.

reflective of a non-utilitarian view of both nature and culture which took as much, if not more, from antiquarian predecessors than from other forms of natural history. The chapter will close with a discussion of the differences between "faithful empiricism" and Daston and Galison's "truth-to-nature," which emerged a generation later to become the dominant epistemological category in the study of nature across Europe.

Antiquarianism and the Epistemology of 'Historia'

As demonstrated in the previous chapters, county natural history was built upon earlier antiquarian endeavours. William Camden's work was among the most commonly cited by the county natural historians, with his name appearing within the first three pages of each published work and regularly throughout the compiled notes of every researcher. According to Robert Plot, in his letter requesting patronage from the gentry of Oxfordshire, it was Camden whose efforts, along with those of John Leland, had built the foundation which his work was intended to add to.[16] It is to antiquarianism, therefore, that we must look for at least part of the intellectual background for county natural history. The most concise definition of the topics which interested antiquarians at the time of Camden was given by his contemporary Francis Bacon:

> Antiquities, or remnants of history, are… when industrious persons, by an exact and scrupulous diligence and observation, out of monuments, names, words, proverbs, traditions, private records and evidences, fragments of

[16] Dr. Plot to the Reverend Dr. John Fell Dean of Christ Church, Oxon (c. 1673), in Gunther (ed.), *Early science in Oxford. Vol. 12, Dr. Plot and the Correspondence of the Philosophical Society of Oxford*, pp. 335-336.

> stories, passages of books that concern not story, and the like, do save and recover somewhat from the deluge of time.[17]

There are two features of this definition which are particularly noteworthy for our discussion of the epistemology of antiquarianism. Firstly, antiquarianism was primarily aimed at preservation and recovery of non-narrative 'fragments', as opposed to other history-writing, which was concerned with narrating the order of events, particularly those involving Royalty.[18] Antiquarian writings were most commonly presented as catalogues rather than coherent works, making little or no attempt to fit the disparate antiquities together into a wider picture of "the times" in which they were located. As a result they aimed to represent the details of the antiquities discussed accurately, and attempted to date them to the relevant period of British history, but made no universal claims and drew no extended narratives from the evidence compiled. Camden's aim was to participate in what he saw as a widespread project of revival and restoration, intending to 'restore antiquity to Britain and Britain to its antiquity.'[19] This focus was consequently upon textual preservation, clearly marking Camden and his fellows as humanist scholars, participating in a tradition of reverence for the past that extended across Europe.

Secondly, seventeenth century English antiquarians mined a wide variety of sources which had not previously appeared in English academic work

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[17] Francis Bacon, *The advancement of learning and New Atlantis*. Edited by Arthur Johnston (Oxford, 1974), p. 72.

[18] For the full historiography see the introduction, but for a relatively concise statement: Parry, *The trophies of time : English antiquarians of the seventeenth century*, pp. 9-16.

[19] Camden, *Britain... written first in Latin by William Camden*, 'the author to the reader'.

for useful information, unlike their narrative or chronicle historian counterparts, who were re-telling the past based on the work of their predecessors. Thus, in addition to the books of the ancients and other authors with which most humanist scholars dealt, humanist antiquarians also utilised monuments, proverbs, traditions, and a wide variety of less conventional textual records, many of which necessitated an ability to sift the trustworthy from the questionable on a far wider scale than comparing scholarly reputations. Camden's work also involved extensive historical research utilising sources within Britain, including 'public records, ecclesiastical registers, many libraries, the archives of cities and churches, monuments and old deeds,' which necessitated him learning at least rudimentary Anglo-Saxon and Welsh, along with a range of British dialects.[20] While he used a far wider source base than most of his predecessors, Levine's argument that he is best considered as a humanist scholar still holds true; it was textual sources, and processes of humanist reconciliation of apparently discrepant reports of phenomena, upon which he relied most heavily.

The humanist nature of Camden's enterprise is demonstrated throughout his *Britannia*, in which he made especially heavy use of the notes of Leland, Talbot and Rogers, as well as the contents of the famous library of Sir Robert Cotton (a former pupil of Camden's), and a substantial library of his

[20] Ibid., 'preface', p. xxv. Camden's chronicles are in *Anglica, Normanica, Hibernica a veteribus scriptis* (Frankfurt, 1603), see Levine, *Humanism and history : origins of modern English historiography*, p. 93, n. 101.

own.[21] The fact that so much of this work had previously only been in manuscript before Camden printed it, often without citation, led critics in the late eighteenth century to assert that his work was based on plagiarism, of Leland in particular.[22] However, when considered as part of the humanist tradition in which the reconciliation and combination of information from a range of texts was common practice, it was inevitable that he drew so much upon the wonderful resource offered by Leland's manuscripts. He also utilised Latin texts, in particular the *Antonine Itineraries*, a list of the stations along Roman roads compiled around the third century AD and translated into English at Camden's request, which gave direction to several of his research trips.

The argument that Camden is best considered as a humanist antiquarian is also demonstrated from his own writings, and especially his extensive correspondence with continental humanist scholars, including the influential Ortelius whom Camden met in London in 1577, and referred to later as 'that excellent reviver of ancient geography'[23]. Not only does Camden here demonstrate his praise for contemporary humanists, he also shows his reverence for the knowledge of the ancients: reviving ancient geography was a valuable aim in itself. Likewise, when assessing the success of his own work, one measure used by Camden was to look at the comparisons which his fellows drew between

[21] DeMolen, 'The Library of William Camden'; Sharpe, *Sir Robert Cotton, 1586-1631 : history and politics in early modern England*, pp. 20, 91.

[22] Huddesford and Warton (eds.), *The lives of those eminent antiquaries John Leland, Thomas Hearne, and Anthony à Wood: with an authentick account of their respective writings and publications, from original papers*, pp. 62-63.

[23] Levine, *Humanism and history : origins of modern English historiography*, p. 93.

his work and ancient scholars such as the Greek geographers Strabo and Pausanias.[24] If other people considered his work to be alongside that of these famous ancient scholars, he mused, then he had been successful in his aims.

While Camden's interests did not often extend to the natural world, many of his humanist counterparts in Europe who had naturalistic interests utilised similar sources and techniques of authority, and displayed similar intentions underpinning their work.[25] Perhaps the prime example of this tradition of *historia* in Europe which has come under examination in recent scholarship was Theodor Zwinger (1533-1588), whose *Theatrum humanae vitae* was first published in 1565 with 1,400 pages; in Zwinger's lifetime it grew to 4,500, and after his death the Flemish Laurentius Beyerlinck expanded it to 7,468 pages plus a 600 page index.[26] Zwinger prided himself upon what we would now term an empirical mindset, in that he focused upon the accurate reporting of "naked things" shorn of the rhetorical flourishes which were common in contemporary natural history.[27] These "naked things" were textual excerpts from previous scholars, compiled using a similar process to that of Camden's

[24] William Camden, *Remaines concerning Britaine their languages. Names. Surnames. Allusions. Anagrammes. Armories. Monies. Empreses. Apparell. Artillarie. Wise speeches. Proverbs. Poesies. Epitaphes* (London, 1637), p. 407.

[25] Brian W. Ogilvie, 'Natural History, Ethics, and Physico-Theology', in Gianna Pomata and Nancy G. Siraisi (eds), *Historia: Empiricism and Erudition in Early Modern Europe* (Cambridge, Mass., 2005), pp. 80-82.

[26] Ann Blair, '*Historia* in Zwinger's *Theatrum humanae vitae*', in Gianna Pomata and Nancy G. Siraisi (eds), *Historia: Empiricism and Erudition in Early Modern Europe* (Cambridge, Massachusetts, 2005), pp. 270-271.

[27] Ibid., p. 280; Chiara Crisciani, 'Histories, Stories, *Exempla*, and Anecdotes: Michele Savonarola from Latin to Vernacular', in Gianna Pomata and Nancy G. Siraisi (eds), *Historia: Empiricism and Erudition in Early Modern Europe* (Cambridge, Mass., 2005), p. 297.

borrowings from the histories of Leland and others. Even those texts which were explicitly focused upon specific natural phenomena have recently been argued to demonstrate a similarly textual basis for authority, for instance Leah Knight in her *of Books and Botany* argues that John Gerard's (1545-1611/2) *The Herball or Generall Historie of Plants* (1597) has more in common with an eighteenth-century literary history than a botanical text;[28] while the *Historia* of Zwinger and Gerard was empirical in that it focused upon the reporting of things rather than their explanation, texts rank highly in their source-base.

As the seventeenth century began, historians of collection such as Marjorie Swann have noted, there was an increasing reference to collected physical objects in both texts and correspondence. This is illustrated by the changing meaning of the word "collection", which in fifteenth and sixteenth centuries was used to refer to compiled texts, but by the mid-seventeenth had come to include artistic and scientifically-interesting objects.[29] For most historians of science, this represents one of the delayed impacts of the discovery of the new world. As has been argued since the publication of Elliott's *Old World and the New* in 1970, the discovery of the new world initially brought with it an attempt to locate the plants and objects found in ancient texts; to reconcile observations with textual authority. Over the course of generations, humanist

[28] Leah Knight, *Of books and botany in early modern England : sixteenth-century plants and print culture* (Farnham, 2009), pp. xi-xvi, 71-73. Also see Ogilvie, *The science of describing*, p. 188.

[29] '"collection, n."', *Oxford English Dictionary*, <http://www.oed.com/view/Entry/36275?rskey=c4pQc3&result=1&isAdvanced=false> (14 Jan). see Swann, *Curiosities and Texts*, p. 1.

scholars realised that works they had formerly taken as key points of reference, such as Pliny's *Naturalis Historia*, were in fact incomplete. Therefore, rather than reconciling objects which were found in the new world with ancient texts, some humanist scholars began to add to them- the aim of their work being to add these details without changing the framework of ancient scholars, for instance, by producing new 'editions' of *Naturalis Historia* with newly found plants included.[30]

This recognition that ancient work was not complete, Cooper argues, led to a drive to record local nature as part of a project to add further detail to our knowledge. If Pliny had not included some plants found in America, would the same also be true for the Germanic states, or England? As was discussed in the introduction, one of the effects of this line of thinking was an increased investigation of local knowledge, a process named the *Invention of the Indigenous* by Cooper.[31] This local focus of natural history is epitomised by the work of Carolus Clusius (1526-1609), who published two works on less common plants (in 1576 and 1583) which made no pretensions to being complete collections, but instead focused only on describing things which were not seen in

[30] Swann, *Curiosities and Texts*, pp. 58-61.

[31] Cooper, *Inventing the Indigenous*. Also see: Katharine Park, 'Natural Particulars: Medical Epistemology, Practice, and the Literature of Healing Springs', in Anthony Grafton and Nancy G. Siraisi (eds), *Natural Particulars: nature and the disciplines in Renaissance Europe* (London, 1999), pp. 348, 356; Findlen, *Possessing nature : museums, collecting, and scientific culture in early modern Italy*, p. 70; Emma Spary, 'Political, natural and bodily economies', in Nicholas Jardine, Emma Spary, and J. A. Secord (eds), *Cultures of Natural History* (Cambridge, 1996), p. 194.

ancient texts.[32] He thought that either the translations of ancient works were imperfect, or that some of the detail had been lost through the passage of time, and sought to restore and expand this detail through fieldwork and the extensive description thereof.[33]

Clusius, and other scholars, presented this incorporation of new "things" alongside ancient texts as a continuation of the humanist process of reconciliation discussed above, adding the natural world around them as *one* (not the) basis of authority, alongside texts. As such, Clusius's work was collated into encyclopaedias, like later drafts of Zwinger's *Theatrum,* as well as being added into new editions of ancient works like Pliny's *Natural History.* As touched upon in the previous chapter, first-hand observations were discussed in an increasingly stylized manner, which came with the perception that reports of these observations were worthy of consideration alongside, or even in place of, data collected from texts.[34] Daston has styled this process, in which first-hand observations were intended to add to humanist knowledge became an object of investigation in themselves, the emergence of observation as an "epistemic

[32] Brian W. Ogilvie, 'The Many Books of Nature: Renaissance Naturalists and Information Overload', *Journal for the History of Ideas* 64 no. 1 (2003), pp. 32-37.

[33] C. Swan, *Art, Science and Witchcraft in Early Modern Holland: Jacques de Gheyn (1565-1629)* (Cambridge, 2005), pp. 104-108.

[34] See especially: Daston, 'The Nature of Nature in Early Modern Europe'; Lorraine Daston, 'On Scientific Observation', *ISIS* 99 no. 1 (2008); Daston and Galison, *Objectivity*; Daston and Park, *Wonders and the order of nature*; Daston and Vidal, *The moral authority of nature*.

genre".[35] The term indicates that the development of a humanist, literary, form of empiricism had the effect of creating a shared culture of description across many disciplines, which was ideal for the aspiring Renaissance polymath in many parts of Europe: from astronomy to medicine, natural history to antiquarianism, the practices of description and the underlying epistemology were recognisably similar.

This descriptive and observational style of writing, which was common among humanist naturalists on the continent, mirrors in many ways that used by Camden to describe the monuments and objects he encountered on his travels, and to re-describe those encountered by Leland and other earlier travellers. However, for the areas in which Camden relied on texts alone, and in particular those which his predecessors had not travelled extensively themselves, this meant that the depth of his research, as he noted himself, was hugely variable. Subsequent scholars sought to add detail to Camden, for instance, William Burton, who sought to add to Camden's seven pages of work on Leicestershire in producing the three hundred and forty page *Description of Leicestershire*, published in 1622.[36] However, Burton soon found that his own work was similarly flawed, initially having his attention drawn by two acquaintances at the

[35] Gianna Pomata, '*Praxis Historialis*: The Uses of *Historia* in Early Modern Medicine', in Gianna Pomata and Nancy G. Siraisi (eds), *Historia: Empiricism and Erudition in Early Modern Europe* (Cambridge, Mass., 2005), p. 48.

[36] Camden, *Britain... written first in Latin by William Camden*, pp. 517-527.'leicestershire'; William Burton, *The Description of Leicester Shire, containing matters of antiquitye, historye, armorye and genealogy* (London, 1622).

College of Arms to significant errors in the genealogical sections,[37] then later coming across some Roman and Saxon antiquities which had not been included, and visited the Cathedral library at Lichfield to add an even wider textual source base.[38] Twenty years after the publication of his first edition, he brought out a second, but by now was aware of the provisional nature of even this mammoth collection of material relating to just one county, apologetically writing in the manuscript of his second edition that it should have been 'for my own private use…[but was] drawn to the press.'[39] Indeed, the further correction of his text was to be a life-long endeavour, resulting in a manuscript three times the length of the printed text; he never saw fit to publish again.[40]

The writings of the humanist antiquarians like Camden and Burton, then, were *knowingly* provisional in nature; as Camden put it himself, 'I frankly own that I am ignorant and many times erroneous nor will I patronise or vindicate my own mistakes'[41]. Both Camden and Burton made no claim to firm knowledge; even the particulars which they reported could always be re-

[37] Thomas Carte et al., *The history and antiquities of the county of Leicester ... : including also Mr. Burton's description of the county, published in 1622 ; and the later collections of Mr. Staveley, Mr. Carte, Mr. Peck, and Sir Thomas Cave*. Edited by John Nichols (London, 1795), vol. 4, p. 842.

[38] Stafford Record Office, Records of the Chetwynd Family D649/4/1, History of Leicester (printed) by Burton, the author's own annotated copy., ; British Library MS Cotton Julius C. iii., Sir John Eliot (d. 1632), letter to Sir Robert Cotton, 10 July 1628,

[39] Carte et al., *The history and antiquities of the county of Leicester ... : including also Mr. Burton's description of the county, published in 1622 ; and the later collections of Mr. Staveley, Mr. Carte, Mr. Peck, and Sir Thomas Cave*, vol. 4, p. xx.

[40] Stafford Record Office, Records of the Chetwynd Family D649/4/3, History of Leicester by Burton, manuscript version for a second edition,

[41] Camden, *Britain... written first in Latin by William Camden*, 'preface'.

interpreted by a later discovery. One of the reasons for this was their reliance upon what they knew to be a patchy textual record, as can be seen through the history of Burton's work; another was their awareness of the long history of incomplete works before them. So, while they were inspired to their task by textual sources, and largely relied upon them (especially so in the case of Camden), they were aware that their work could only present the state of knowledge at that point in time.

The implication of this is that Camden, Burton and others saw the development of antiquarian and chorographic knowledge as one of steady improvement, building on the foundations of previous scholars with new observations and from a widening source base. Likewise, while Clusius and his fellow naturalists focused upon the restoration of ancient learning, they also displayed an intention to improve the level of detail of knowledge about an area within the scholarly community, hinting at a deepening of knowledge. The links between these intentions and the correlating conceptions of authority are clear. Authority, for humanist antiquarians and naturalists, was to be found in the reconciliation and combination of information from a range of texts alongside an extended source base including physical monuments, plants, and other aspects of the natural world itself.

"The Improvement of Knowledge"

> The searching into Natural knowledge began but since or about the death of King Charles the first… [previously] 'twas held a strange presumption for [any] man to attempt improvement of any knowledge whatsoever[42]

The county natural historians, and many of their contemporaries, considered themselves to be part of a revolutionary generation who were the first to attempt to improve, as well as preserve, knowledge. The implications of the quote above from John Aubrey, taken in context as part of the preface to the *Natural History of Wiltshire*, are that previous scholars had been entirely textually-reliant and had not examined the world around them. Likewise, when soliciting patronage for his research into the *Natural History of Oxfordshire*, Robert Plot, after referring to Camden and Leland's prior work in the area, suggests he could utilise '[m]aterials they made little or no use of'.[43] Plot was proposing further widening the source base, the utilisation of new techniques available to him in the latter seventeenth century as discussed in the previous chapter, and crucially the description of a far greater variety of natural objects alongside the man-made. As explorations into what the late medical historian Roy Porter has termed the English Enlightenment have demonstrated, this perception of a revolutionary change in the basis of knowledge spread far wider than local natural historical endeavour, and can be seen for instance in Robert

[42] Aubrey, *The Natural History of Wiltshire*, 'preface'.

[43] Dr. Plot to the Reverend Dr. John Fell Dean of Christ Church, Oxon (c. 1673), in Gunther (ed.), *Early science in Oxford. Vol. 12, Dr. Plot and the Correspondence of the Philosophical Society of Oxford*, pp. 335-336.

Hooke's statement that it was 'high time that [we] should return to the plainness and soundness of Observations on material and obvious things'.[44]

However, most historians of science believe that the rate of change was far slower than the sudden and revolutionary shift perceived by Aubrey and his contemporaries.[45] As I have shown, previous humanist scholars had attempted to increase the accuracy of their information, utilising a wider range of sources and steadily building upon their predecessors. From this perspective, the changes outlined by Aubrey, Plot and Hooke can be seen as incremental, rather than a sudden overturning of the old order. Aubrey himself noted earlier changes, such as 'the Civil-Wars [which] did mightily refine our Language, Husbandry, and Agriculture'[46], and referred to **c**ustoms being dis-used[47] through the 1640s and 50s. Also, as I have discussed, humanist natural historians had been utilising objects and 'new' discoveries within their framework for at least a century before that. However, following the Restoration there was a shift in the culture of knowledge, represented institutionally by the actions of the Royal Society. This was a qualitative and gradual shift in which first-hand observations of physical objects, properly described and assessed, became more reliable and trustworthy than textual sources. The improvement of knowledge had become,

[44] Robert Hooke, *Micrographia, or, Some physiological descriptions of minute bodies made by magnifying glasses with observations and inquiries thereupon* (London, 1665), 'preface', p. 7.

[45] See the discussion on the historiography of the scientific revolution in the introduction.

[46] Bodleian Library, MS Wood F 39- Letters to Wood, John Aubrey to Anthony Wood, 27 October 1691, f. 83.

[47] Bodleian Library, MS Tanner 25- Letters to Tanner and others, John Aubrey to Thomas Tanner, 6 April 1693, f. 67v.

for these men, *primarily* the task of the natural historian in the world, rather than the humanist scholar in the library; indeed, those who chose to ignore physical evidence, whether due to the work of previous authorities or their own reasoned judgement, were criticised directly by county natural historians.

> So strangely Opinionative are some Persons, and fondly link'd to the Wild products of their own teeming Genius, that an Ocular Demonstration to these amounts not to a thorough Conviction; nay, so prodigiously over-weening of those are their Sentiments, it is so far from attaining of it, that against the most evident Truths they wilfully shut their Eyes[48]

The primary change which was pointed to, in this case by Charles Leigh, but also by the other county natural historians, was the belief that the best method of gathering knowledge about the natural world was to observe using the senses.[49] By thus making the things of nature 'sensible', the work of Bacon and his followers such as Plot, Aubrey and Hooke took the humanist encyclopaedic tradition described above and applied it directly to the natural world as experienced by individuals.[50] This, combined with a thoroughly antiquarian impulse to preserve the world around them, was what led people such as John Aubrey to record what they saw on their journeys, and he was far from alone in doing so. In addition to recording, the primacy of the senses made experimentation and precise technique far more important than had hitherto

[48] Leigh, *of Lancashire, Cheshire, and the Peak*, 'The authors vindication of himself, from some calumnies lately cast upon him', p. 191.

[49] Bowen, *Empiricism and Geographical Thought*, p. 3.

[50] Blair, 'Humanist Methods in Natural Philosophy: The Commonplace Book', pp. 550-551.

been the case: John Morton's calculations of soil density are remarkable, as is the exactitude with which Plot paced out the lakes of Staffordshire. Individual curiosity, infused with an intent to preserve and record as well as explore, and combined with a belief that the intensive description of sensory knowledge was worthwhile, was at the heart of the county natural history. To give an example from Thomas Robinson's *Natural History of Westmorland and Cumberland*:

> it's Morally impossible for them to come to any certain Knowledge of the Natural Consistencies of this Earth, the Position of the several Strata, and Sediments on which its Fabric is Built; the Nature of Veins, Mines, and Minerals, the Circulation of Subterene Waters, from whence all Springs and Rivers have their Rise; unless from the uncertain Reports of Miners, who sometimes go about the Country like Mountebanks, pretending to what they know no more of than Children in the Horn-Book know of Metaphysics, of Mathematics.[51]

Neither speculation from those who had not experienced the properties and behaviour of materials within mines, nor the untrustworthy reports of miners, then, constituted worthwhile knowledge on their own. But, the testimony of the miners, 'uncertain' as it was, was still seen as important. As demonstrated in the previous chapter, county natural historians, as a group, were looking for observational testimony, for matters of fact which could be verified by any educated party, ideally without any equipment; but they were also happy to accept testimony from laboring men when it provided evidence

[51] Robinson, *of Westmorland and Cumberland*, 'preface'.

they would not otherwise have come across, validated to an extent by the personal experience which the miners could claim.[52] As such, the authors felt that a detailed account of the exact location and source of each particular described would allow the reader to 'see' that the information had been recorded faithfully from nature, through a reliable witness or set of witnesses. The aim was to produce a description which was faithful to nature. 'Nature', Aubrey argues, 'is the best Guide, and the best Patern: 'tis better to copy nature than Books: as the best Painters imitate nature, not copies[53]

It is important to note here, repeating the argument of the previous chapter that the aim was to 'copy'; this was a discipline founded on preservation of individual matters of fact rather than conjecture regarding generalities. The most important unifying factor was the author's lack of argument regarding causation. In the case of religious or politically divisive objects and topics, this could be explained, perhaps, as an attempt to avoid controversy in the turbulent world of late-seventeenth-century England, but the everyday was here, too, the subject of description rather than explanation. For instance, regarding the provenance of a particular type of 'ancient' coin he had come across, Leigh posits a couple of suggestions in fairly bland language and concludes: 'since therefore that matter… cannot be fully determined, I shall leave every Man to his own

[52] Bruno Latour, 'Why Has Critique Run out of Steam? From Matters of Fact to Matters of Concern', *Critical Inquiry* 30 (2004), pp. 236-237; Martin Mulsow, 'Antiquarianism and Idolatry: The Historia of Religions in the Seventeenth Century', in Gianna Pomata and Nancy G. Siraisi (eds), *Historia: Empiricism and Erudition in Early Modern Europe* (Cambridge, Mass., 2005), p. 182.

[53] Bodleian Library, MS Aubrey 10, John Aubrey, An Idea of Education of Young Gentlemen and Idea Filioli seu Educatio Pueri, f. 95.

Conjectures.'[54] This was not natural philosophy of the "new" style, which took deracinated particulars and generalised from them to form theories about the world, nor was there an overt intention of providing the facts for others to do so in county natural histories themselves. That is not to say that this "Modern" mode of thought was not available to the county natural historians as individuals: in private correspondence,[55] at meetings of the Royal Society and through articles in *Philosophical Transactions* these individuals did utilise their research in this manner. But, for the county natural history, they felt that conjecture should be more clearly demarcated, and that generalisations should be strictly avoided.

By focusing on the increasing reliance of the investigation of nature in the period upon physical sources, and the demarcation of conjecture, though, I do not mean to imply that ancient influences were not still pervasive. The structure of the works, and indeed many of the 'heads' of questionnaires under which notes were gathered, were taken almost directly from Pliny's *Natural History*, which was still viewed as describing the order of nature. Thus, Plot states that '[h]aving done with the Mineral, the order of Nature directs us next to consider the Vegetable Kingdom'[56]. In this way, like the sixteenth-century Swiss natural historian Conrad Gessner who used information from contemporary

[54] Leigh, *of Lancashire, Cheshire, and the Peak*, vol. 2, p. 80.

[55] E.g. Charles Leigh to Richard Rawlinson, 9 April 1700, Bodleian Library, MS Radcliffe Trust c. 1, Charles Leigh to Richard Rawlinson, 9 April 1700, f. 22. And Nathaniel Johnston to Martin Lister, 13 May 1672, Lister's Correspondence, f. 13-15.

[56] Plot, *of Stafford-shire*, p. 199.

sources within a traditional structure,[57] the county natural historians were crossing the intellectual divide posited by historians since the 1930s: they were both ancient and modern, in the terminology of R. F. Jones.[58] As Plot himself put it, 'I think I have discovered a great many mistakes of some very great men, but I shall endeavour to treat them with all the respect imaginable;'[59] for Plot, and most of his contemporaries, former authors were to be respected, but not absolutely trusted.

There were many potential implications of the belief that personal observations and properly collected testimony were epistemologically superior to a discussion of the work of prior authors. To give a brief indication of this variety in contemporary discussion I will now turn to William Petty, Robert Boyle and John Ray- each of whom pursued natural knowledge in different ways. Like his contemporary and correspondent Aubrey, William Petty believed that the proper method of science was to 'use only arguments of Sense; leaving those that depend upon Mutable Minds, Opinions, Appetites and Passions of particular Men, to the Consideration of others', though even in the 1670s and 1680s when working on what would become his *Political Arithmetic,* he considered this method 'not yet very usual'.[60] Petty, again like Aubrey and other county natural

[57] Ashworth, 'Emblematic natural history of the Renaissance', p. 28.

[58] Richard Foster Jones, *Ancients and moderns; a study of the rise of the scientific movement in seventeenth-century England* (St. Louis, 1936).

[59] Dr. Robert Plot to the Revd. Dr. Arthur Charlet Master of University College in Oxford, 2 September 1693, in Gunther (ed.), *Early science in Oxford. Vol. 12, Dr. Plot and the Correspondence of the Philosophical Society of Oxford*, pp. 396-397.

[60] Sir William Petty, *Political arithmetick, or, A discourse concerning the extent and value of lands, people, buildings ... as the same relates to every country in general, but more*

historians, utilised methodologies of surveying and information collection, though on a much larger scale in his survey of Ireland, which led to the redistribution of 8.4 million acres of formerly-Catholic land to Protestants. Likewise, his discussions of the importance of first-hand observation, social processes of assessing testimony, and experiments mirror those of the county natural historians and the Royal Society at large. However, unlike Aubrey, Petty saw the investigation of nature as firstly, necessarily part of natural philosophy, and secondly, part of government. Petty intended to generalise from individual experiences both to make comparisons between nations and to produce theories on the basis of them, using them as empirical evidence with the ultimate aim being to 'produce great & Noble pieces of art, tending to the happiness of Mankind'.[61]

While his work was less explicitly political, Robert Boyle exemplifies the use of sensory knowledge as the basis for natural philosophy, with both similarities and contrasts to the county natural historians. His work involved the use of precise social, technical and literary practices, which in many ways mirror those discussed in the previous chapter. In addition, Boyle exemplifies the use of 'virtual witnessing', which enabled the reader to witness observations and experiments at a distance, using a similar style of thick description to the county

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particularly to the territories of His Majesty of Great Britain, and his neighbours of Holland, Zealand, and France (London, 1690), sig. 4.

[61] Petty to Hartlib [early 1649], Hartlb Papers, 7/123/1a cited in McCormick, *William Petty and the ambitions of political arithmetic*, p. 304.

natural history.[62] Boyle also pointed to the use of instrumentation in expanding the dominion of sensory knowledge.[63] As we have seen, Robert Plot both agreed with this proposition (as evidenced by his chemical work) and, despite the general use of simple observations in his county studies, also suggested the use of instrumentation by others to repeat them and increase their accuracy. The key difference between the two's work was the intention: Boyle intended to use the particulars of natural history to produce natural philosophical theories, and to test them using experimentation. He situated himself at the idealised centre of a continuum of knowledge-producers which ran from over-ambitious philosophers (Hobbes) through sober and judicious experimentalists to 'modest' observers.[64] Plot on this schema, and most likely his own self-definition, was 'modest'.

Even among those whom we could categorise as natural historians rather than natural philosophers, there was significant disagreement as to the aims of natural historical knowledge and the correct use of particulars, epitomised by the works of John Ray. Early in his life (W)ray[65] wrote a local flora discussing the 558 species of plants found in Cambridgeshire- *Catalogus plantarum circa Cantabrigiam nascentium* (1660), much like the continental local floras discussed above. Around the same time, he undertook extensive tours through much of England and Wales, as well as parts of Scotland, investigating his route in a way which had much in common with the county natural

[62] Shapin and Schaffer, *Leviathan and the air-pump*, pp. 18, 56-10.

[63] Ibid., p. 36.

[64] Ibid., pp. 4, 65; Dear, *Revolutionizing the sciences*, p. 141.

[65] He dropped the W in 1670 to facilitate the latinisation of his name.

historians, both methodologically in his use of discussion with locals, and in terms of the integration of antiquities as well as the full range of natural historical miscellanea.[66] By the 1690s, though, his work and interests had clearly shifted to focus upon the classificatory systems for which he is chiefly remembered. It is here that he clearly departs from the majority of the work of county natural historians, with the exception of John Morton's work on the classification of fossils.[67] Rather than the compilation of particulars as undertaken by county natural historians, Ray's later naturalistic works were written 'that I might dispose all animals that are known with certainty in a more accurate order, one more suited to their natures than the order currently in use'.[68]

Fidelity and Empiricism

County natural history, then, was written during a time in which the basis and intentions of knowledge production were strongly contested, and county natural historians had their own shared, but particular, view of this. I will argue that they represented a very specific style of empiricism, which was founded on the idea put forward by Thomas Browne that the author:

[66] Among other works, John Ray, *Observations topographical, moral, & physiological made in a journey through part of the low-countries, Germany, Italy, and France with a catalogue of plants not native of England, found spontaneously growing in those parts, and their virtues ... ; whereunto is added a brief account of Francis Willughby, Esq., his voyage through a great part of Spain*. Edited by Francis Willughby (London, 1673).

[67] John Morton to Edward Lhwyd, 4 November 1695, Letters to Lhwyd, ff. 403-404.

[68] Ogilvie's translation of Ray, *Synopsis quadrupedum*, sig. 1, in Ogilvie, *The science of describing*, p. 262.

> may Impose nothing credulously upon the World from the unexamined Traditions of the Ancients, but true and just Observations, taken from the Natural State of things, faithfully represented[69]

It is to the faithful representation of nature that I wish to turn now, an idea which was central to all of the county natural histories, and which I refer to as *fidelity*. As Lorraine Daston has argued in several recent works, the language used to represent, and the meaning of, what we now know as objectivity has changed through time. In *Objectivity*, during an introductory discussion of the shifting meaning of objectivity and subjectivity through time, Daston and Galison state: 'over the course of five hundred years, they were always paired: there is no objectivity without subjectivity to suppress, and vice versa.'[70] While they are discussing the variety of epistemic virtues which can be embedded in a discussion of objectivity, there is a further conclusion which can be drawn out from their discussion: the relationship between competing objectivities and subjectivities is political, one of suppression and revolt. Therefore, in times of contestation between alternative regimes of truth, such as latter seventeenth century England, we may surmise that fundamentally different "objectivities" could, potentially, arise. I will argue that, while contemporaries such as John Ray utilised an epistemology which loosely resembles "truth-to-nature" as discussed by Daston and Galison for the eighteenth century, the county natural historians had an alternative viewpoint as to the objectivity of their work. The

[69] Browne, *Proposals by way of a contribution*, p. 2.

[70] Daston and Galison, *Objectivity*, p. 33.

epistemology utilised by the county natural historians, as well as many of their immediate peers, was based around the faithful representation of particulars.

One of the strongest ideological divisions of post-Restoration England centred upon the lessons to be learnt from the Civil Wars, which in turn hinged on their explanation. As such, given the fear of a return to polarisation to such an extent that War could occur, there was a strong impetus towards expressing oneself using a consciously non-political rhetoric, focusing on the negotiation and representation of truths, rather than the statement thereof. Towards the turn of the eighteenth century this was codified in terms of 'politeness', which attempted to consciously distance religious and scientific debate from contemporary political conflict.[71] Truth, in this period as perhaps no other, was an inherently political issue, and this was one of the reasons that truth claims had to be made with such care and precision; this led to the expression of nuanced epistemologies discussed above with reference to Petty, Boyle and Ray. If one's investigations, whether into nature or the history of the Civil War, were carefully delimited and marked as sober, judicious, modest, or a host of other terms with similar meanings in the period, one could avoid controversial and potentially damaging arguments regarding absolute truth while remaining "faithful" to nature in its description.

The central focus of faithful representation in the county natural history was the thick description of sensory detail. An example of this is Robert Plot's

[71] For the relevant historiography see Mark Knights, *Representation and misrepresentation in later Stuart Britain : partisanship and political culture* (Oxford, 2005), pp. 17-20.

description of Belemnites, which were also referred to contemporaneously as "thunder-bolts" in recognition of their arrow-like shape.

> Their texture is of small striae, or threads radiating from the center, or rather axis of the Stone, to the outermost superficies; and that burn'd, or rub'd against one another, or scraped with a knife, they yield an odour like rasped Horn.

The description does not end with sight, touch and smell- we also learn of the measured size, up to four inches in length and an inch and a quarter in thickness, and the colour, 'cinerrous [ash-grey], including to yellow… [or] of a bluish colour'.[72] This detailed description of the artefact is then combined with a short discussion of medicinal uses 'mentioned by Coetius, Aldovandus, and Gessner'. But, for the county natural historians, it was the sensory description which took centre-stage, with references to other texts and additional images used to add detail, rather than the reverse as in earlier antiquarian work and *historia*.

[72] Plot, *of Oxford-shire*, pp. 93-94.

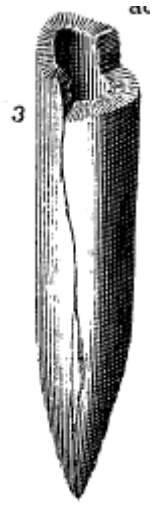

Figure 12- Belemnite. Source: Plot, *of Oxfordshire*, p. 100

One effect of this extensive use of sensory detail, especially when combined with the desire not to generalise into theories about the natural world as a whole, was a strong focus upon regional variation. At times this morphs, especially in John Aubrey's case, into the formulation of conjectures regarding the relationship between the natural environment and the people within it, for instance 'at Huntley in Gloustershire, the nature of the people breaks with the soil.'[73] While Mendyk has suggested that this represents 'environmental determinism',[74] I would not go so far: here Aubrey is referring, in a very traditional way, to the similar or analogous relationship between soil and people; he does not suggest nor consistently imply a causative relationship. By and large, though, the reports of regional variation are more clearly and restrictively descriptive, for instance from John Morton:

[73] Bodleian Library, MS Aubrey 1, John Aubrey, The Naturall Historie of Wiltshire, part 1, f. 10.

[74] Mendyk, *'Speculum Britanniae'*, p. 171.

> There is a *Heathy* Tract in the lower Part of the County on the Verge of the *Fenland*, and another very like it, in one of the highest Parts of the County, namely, in the *South-West* Angle: a Parcel of Clayey Soil upon the *Leicestershire* Side, another on the *Huntingdon* and *Bedfordshire* Side, and another on the *Warwickshire* Side. There is no where to be found any very large Parcel, lying together uninterrupted, of one and the same Sort of Soil.[75]

While many such descriptions, like the above, are of everyday things which will have been encountered by all readers, there were two particular focuses which ran through county natural history as a genre: the previously unknown, and the individual; both of which were specific to a particular place. This is particularly the case in the sections of the work which were of least interest to the author, in the case of Robert Plot the botanical elements, which he limited to 'all the indigenous plants either wholly undescribed, or described but imperfectly, that I met with in this County.'[76] Even in this area, though, Plot's curious eye ensured that he noticed those specific, individual plants which were in some way exceptional to him, such as:

> at Milwich at the South end of the Vicaridg house, grows an Ivy Bush which ascending to the top of the roof and twisting it self about a wooden

[75] Morton, *of Northampton-shire*, p. 35.

[76] the quote continues 'the most ingenious Mr John Ray having lived so many years in the confines of this County, and no doubt searched it diligently.' Plot, *of Stafford-shire*, p. 202.

> pinnacle there, and having no higher support, after spreads into branches like an Oak or Elm, and carrys a fine round top standing of itself[77].

These thick, sensory descriptions were on occasion allied to visual illustrations, or reference to those physical objects which could be visited by the reader; these were used alongside, rather than in place of, the textual description. So, after an extensive description of a 'coarse Spar in Form of a small Mushroome, shooting out of Lime-stone', as well as the circumstances of its discovery, Plot refers to an illustration in another text by both mentioning John Ray in the main body of the text, and directing the reader to the appropriate page of Ray's work in a side-note.[78] Where there was an extant illustration, a reference of this type was to be expected, but there was also extensive use of specially commissioned copperplates as discussed in chapter two, prints from which were added to the text, as well as the use of physical collections which could be viewed by readers at locations such as the Ashmolean or Royal Society. The question which the following few paragraphs will examine is the relationship of these illustrations or objects to the text, as far as conveying a sense of fidelity to the particulars being described was concerned.

The illustrations included in the county natural histories all referenced specific objects which had been found on research trips, and were located specifically in a narrative. In many ways, the relationship between illustration and collection was symbiotic; an illustration or a reference to a physical object

[77] Ibid., p. 206.

[78] Morton, *of Northampton-shire*, p. 181.

carried a similar sense of fidelity to the particulars. For an example of the benefits illustration brought on occasion by increasing the depth of the descriptive content of the county natural histories, the reader of Morton's *of Northamptonshire* is presented with both a description and illustration of three stones 'of a depressed Orbicular Form, and very finely striate or streaked from the Top, as are some Hair Buttons. We find them at Helmdon and elsewhere in the Stone-pits.'[79]

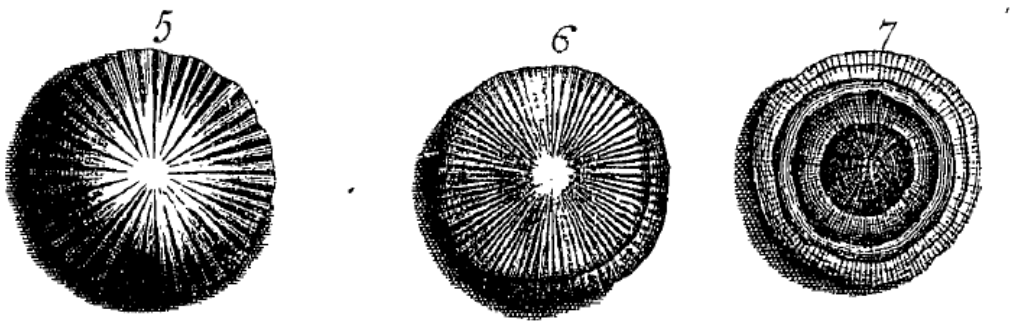

Figure 13- Depressed Orbicular Stones. Source: Morton, *of Northamptonshire*, pp. 184-85.

Unlike some of their contemporaries, such as those recently examined by Sachiko Kusukawa in her article 'Picturing knowledge in the early Royal Society', the county natural historians did not discuss the purpose or the epistemological priority of their illustrations explicitly, either in their printed works or correspondence.[80] However, that is not to say we cannot discern an impression of what the images were for from examples like the above, which principally was to add further detail to the text, to add a further sense of precise

[79] Ibid., p. 182.

[80] Sachiko Kusukawa, 'Picturing Knowledge in the Early Royal Society: The Examples of Richard Waller and Henry Hunt', *Notes and Records of the Royal Society of London* 65 (2011).

fidelity and, in the case above, to stress the variability. While the textual description for the three would be nigh-on identical, the inclusion of a precise illustration engraved by an expert exposes the differences between them to the reader. In other cases, we see a more symbiotic relationship between textual description and image, as suggested in the following quote and image, neither of which would stand alone:

> In the same Pit, was found another stone of a greenish-blue colour, with a bore through the middle, and furrowed from each orifice around the sides, like a *Cloak button*, as in fig. 21. which most certainly would really serve for a *button mould* of that form.[81]

Figure 14- Cloak Button-like Stone. Source: Plot, *of Stafford-Shire*, pp. 198-99.

In addition to utilising image to add detail, fidelity, and variety to their work, the county natural historians also referred to those objects collected on each of their research trips. The legacy of this propensity for collection remains with us today in the Ashmolean, British, and Natural History museums, as well as at sundry other locations.[82] Indeed, without Robert Plot's *The Natural History of Oxfordshire* Ashmole himself may not have donated his collections to the

[81] Plot, *of Stafford-shire*, p. 198.

[82] For instance- part of Morton's collection is now at the Woodward museum in Cambridge

University,[83] and Plot was the first 'Custos' of the objects in the natural and antiquarian sciences centre which would become the Ashmolean museum, living in the centre from 1689 until 1690. As well as encouraging the generosity of Ashmole, the collections of the county natural historians themselves remain with us; John Morton, for instance, donated nearly 1,000 objects, as well as his personal copy of *The Natural History of Northamptonshire*, to Sir Hans Sloane's collections (as marked by either his name or an 'M' in the catalogue) which came to form the basis of the British Museum, and later a significant part of the Natural History Museum.[84] The importance of these collections, and the thought which went into deciding how to distribute them, is clearly demonstrated in Aubrey's correspondence, and particularly through the many melancholy moments which he spent contemplating his own death:

> Now what shall I say, or do with these pretty collections?... I thought to have made Mr R. Hooke my Executor to publish them if I die before I do it my self: but he hath so much to do of his own, that he will not be able to finish. … and if you survive me, you would be more careful of them than any body else. Mr Elias Ashm[ole] grows old, and sickly[85].

The value of collections, for the county natural historians and many of their contemporaries, was that they carried with them a sense of authenticity and fidelity- authors referred to the objects collected, and where they could be

[83] R. T. Gunther, 'The Letters of Robert Plot', Gunther (ed.), *Early science in Oxford. Vol. 12, Dr. Plot and the Correspondence of the Philosophical Society of Oxford*, p. 333.

[84] John Morton, The Natural History of Northamptonshire; with some account of the antiquities. To which is annex'd a transcript of Domesday-Book, so far as it relates to that county... with copious MS. notes by the author,

[85] Lambarde, *A perambulation of Kent* p. 292.

found and visited, as a way of giving their textual reports additional authority. For example, regarding a *Pertusilla tetragona*, a particular type of fossil shell, Morton informs the reader that he had come across two examples of this in his travels. 'one now in Mr. Lhwyd's Collection, which was found at *Marston* among the *Asteriae*: Another in the Gravel-pit at *Oxendon*.'[86] In other cases, a similar sense of fidelity was achieved by referencing the location of the observation so that an interested reader could, potentially, re-visit the place themselves. For instance when Morton discusses a particularly white earth, he sets it in context, saying it was located at the 'house in Chadston' of a Mr Hilsden, Rector of Castle-Ashby, which could be visited by any gentleman travelling in the area.[87]

The collection of objects which could be referenced was one way in which objects brought fidelity to a description, while the description of things which could not be physically collected in their context was another. As the quote below from Robert Plot demonstrates, sufficient information was given regarding immovable things for the reader to potentially visit them. Either the physical collection of objects, or the description of their context and situation, brought sufficient authority to demonstrate a matter of fact.

> for such things as are inseparable from their places, they remain to be seen as in the History directed, there being nothing here mentioned, but what either the Author has seen himself, or has received unquestionable

[86] Morton, *of Northampton-shire*, p. 229.

[87] Ibid., p. 62.

> testimony for it, which for the most part, if not always, the Reader will find cited.[88]

Natural history, for the county natural historians, was intended to produce individual matters of fact which were described through text and the illustration or collection of objects. The focus was solely on this description, with any conjectures beyond being both clearly secondary and couched in reserved language. In many ways, this is reminiscent of both antiquarian and previous humanistic work, but the crucial difference is that the county natural history further restricted itself to sensory knowledge. There are very few reports of folklore associated with the objects being discussed, and virtually no mention of popular conceptions of the religious meaning of objects. As John Morton put it, the aim of the county natural history was to produce precise and singular knowledge:

> Exact Descriptions of Things, however small or seemingly contemptible: and faithful Accounts of what is observable in them, will always be of Use to those who study Nature.[89]

The provision of exact descriptions was at the heart of faithful empiricism for the county natural historians. However, we should be careful to clearly distinguish 'fidelity' from our contemporary sense of 'objectivity'. Rather than referring to a theory-less view of a purely physical nature, unclouded by cultural preconceptions (as contemporary objectivity implies, by most accounts), fidelity aimed towards honest and impartial representation of a natural world

[88] Plot, *of Oxford-shire*, 'to the reader'.

[89] Morton, *of Northampton-shire*, 'the preface', p. ii.

which was itself inherently (and in the works openly) moral and religious. Note that as discussed in the introduction this does not imply a "Renaissance episteme" of the type that Foucault argued for in his *Les mots et les choses*,[90] which took metaphoric correspondences such as those between macro and microcosm literally; nor am I referring to an 'emblematic' world view which implies that there is no distinction between nature and culture.[91] There was, for county natural historians,[92] a clear distinction between the investigation of nature and its symbolic interpretation: symbolism was largely outside the purview of finished works, but appeared regularly in Aubrey's *Miscellanies* and elsewhere. However, as Schama's *Landscape and Memory* attests, nature itself is inherently meaningful: 'built up as much from strata of memory, as from layers of rock.'[93] Unlike many of our contemporaries, however, the county natural historians were well aware of this connection between landscape and memory, and hence presented their matters of fact, whether dealing with antiquarian remnants of past societies or purely natural subjects, as physical objects that also held significant cultural meanings.

One motivation for this fidelity, to be discussed at length in chapter four, was a religious imperative which was shared by all of the county natural historians, though in markedly different forms. John Aubrey expressed it as 'a

[90] Foucault, *The order of things*.

[91] Ashworth, 'Natural History and the Emblematic World View'; Ashworth, 'Emblematic natural history of the Renaissance'.

[92] And, as discussed in the introduction, many of their contemporaries and immediate predecessors.

[93] Schama, *Landscape and memory*, p. 7.

profound part of Religion to glorify God in his Workes';[94] in the act of description itself, he thought he was exposing the glory of God. Morton and Robinson, on the other hand, saw natural history as a path to understanding God's actions in a style of natural theology.[95] However, whether description was exposing God's glory, or his plans for man, all of the county natural historians considered nature as a whole to be God's work, meaning that He could and should be worshiped through the preservation of specific bits of nature. When describing the world that God created, these individuals felt an obvious and deep-seated obligation to do so honestly and with fidelity. This focus on fidelity, combined with the lack of absolute faith in the work of other authors, had in the opinion of Charles Leigh significant epistemological consequences:

> The Method I have taken in this Book (which has been a Work of Seventeen Years) is chiefly to relate Matter of Fact; having seen the Misfortunes of many, in swelling their Books with Digressive Quotations, and Chimerical Hypotheses, and as the French observe, frequently losing the Truth by Argument.[96]

Yet individual observation of matters of fact was in some cases seen as insufficient by county natural historians, and it is here that the authors point to a wider culture of curiosity and interest in the landscape among their contemporaries. For instance, at Leek (in the Staffordshire moorlands) some un-

[94] John Aubrey, The Naturall Historie of Wiltshire, part 1, f. 8.

[95] Keith M. Brown, 'Scottish identity in the seventeenth century', in Brendan Bradshaw and Peter Roberts (eds), *British Consciousness and identity: the making of Britain, 1533-1707* (Cambridge, 1998), p. 250; Daston, 'Attention and the Values of Nature in the Enlightenment', p. 107.

[96] Leigh, *of Lancashire, Cheshire, and the Peak*, 'the epistle dedicatory'.

named inhabitants told Plot of a place in the Church yard at which, on each day in the year, the sun sets in a noticeably different position when watched from a particular location thanks to the local landscape and hills. This, as Plot tells us, went against the astronomical theory of the day that 'the Sun whilst it occupies that Cardinal point [at the solstice], appears stationary for some time… they can plainly perceive by the help of this Hill, that no two days are equal'- because around the Summer Solstice the sun actually set twice, once on either side of 'the cloud'.[97]

Figure 15- Summer Solstice at Leek. Source: Plot, *Of Stafford-Shire*, p. 28.

As this was a highly unusual phenomena, Plot decided, firstly, to observe it himself over the course of six days, rather than taking the reports of it at face value. Secondly, he cites the Temple of Tentiris in Egypt, in which the sun's beams go through a different window each day demonstrating its continual movement, as support for his own observations.[98] He is here weighing testimony from several different sources, and using text to support his own observations,

[97] Plot, *of Stafford-shire*, pp. 2-3.

[98]Ibid. cites H Vanslebius's *Present State of Egypt* p. 246.

which he knows will be controversial. But importantly, he then indicates that he remains unsure as to the accuracy of his observations, and appeals to the locals to resolve the matter in the future. He does this by ending the discussion with a request to the 'Curious that for the most part reside thereabout [to] make annual and more strict observations for the future by suitable Instruments', with the aim of determining the rate of change of the earth's tilt.[99]

Plot's reference to the 'Curious' who might want to observe the double-sunset annually is an excellent example of the changes in the conception of curiosity which took place around the middle of the seventeenth century, as discussed in chapter one. John Aubrey, the founder of county natural history and representative of this new state of the 'curious', took it for granted that curiosity led to the investigation of the natural world itself. In his brief autobiography he tells us that, as a child living in the estate house of Easton Pierse, he 'was very curious; his greatest delight to be continually with the artificers that came there (e.g. joiners, carpenters, copuers, masons), and understood their trades';[100] he also states that he was 'inclined by [his] Genius … to the Love of Antiquities' and an active interest in the natural world around him.[101] In short, Aubrey had hugely wide ranging interests, and expected the same from other people, even from an

[99] Ibid., p. 3.

[100] John Aubrey, *'Brief lives', chiefly of contemporaries, set down by John Aubrey, between the years 1669 and 1696 : Ed. from the author's mss.* Edited by Andrew Clark (Oxford, 1898), vol. 1, p. 35.

[101] John Aubrey, Monumenta Britannica or A Miscellanie of British Antiquities, vol. 1, f. 23.

early age, as he demonstrates through a belief that it was possible to gauge a child's potential 'by his Curiosity, or non-curiosity'[102].

Utility and Curiosity

The wider culture of curiosity underpinned the intentions of Aubrey and his fellows regarding the natural world, which was to collect information. Aubrey expected that this belief in curiosity as perhaps the defining property of an individual would be shared by his peers. John Evelyn in his extensive writings calls curious individuals, particularly those who were involved with the Royal Society and undertook natural philosophy in the new style, 'virtuosos', and it is a culture of virtuosity which Aubrey hoped to be part of.[103] In addition to Evelyn, another founder member of the Royal Society, Sir John Hoskyns (1634-1705), evidently shared Aubrey's predilection, stating that 'every man has his delight; ingenious information is mine.'[104] However, while this was a shared culture, it was by no means a universal one. The suspicion that the Royal Society was considering founding a university raised enmity at Oxford, and the response of fellows of the College of Physicians was mixed.[105] Indeed, Evelyn complained regarding the new science in 1679 that ''Tis impossible to conceive, how so

[102] John Aubrey, An Idea of Education of Young Gentlemen and Idea Filioli seu Educatio Pueri, f. 163v.

[103] Harold J. Cook, 'Physicians and the new philosophy: Henry Stubbe and the Virtuosi Physicians', in R. K. French and A. Wear (eds), *The Medical revolution of the seventeenth century* (Cambridge, 1989), p. 248.

[104] Quoted in Hunter, *John Aubrey*, p. 93.

[105] Hunter, *Science and the Shape of Orthodoxy*, p. 112.

honest, and worthy a *design* should have found so few *Promoters*, and so cold a welcome in a *Nation* whose *eyes* are so wide open.'[106]

There was also a considerable amount of satire directed towards the virtuosi- most famously Thomas Shadwell's (c. 1640-1692) *The Virtuoso* (1676) which pokes fun at court culture. The central character, the virtuoso Sir Nicholas, performs many experiments over the course of the play, nearly all of which mirror real experiments undertaken at the Royal Society as reported in Hooke's *Micrographia* and *Philosophical Transactions*.[107] Hooke recounts that when he went to see the play 'People almost Pointed', suggesting that he knew he was the target.[108] In a spoof picking up at the death of Sir Nicholas, which appeared in the *Tatler* in 1710, his wife asks 'if you know any one that has an Occasion for a Parcel of dry'd Spiders' to aid her disposal of her husband's 'many Rarities and Curiosities';[109] evidently, the author of this spoof was not acquainted with Martin Lister. At the heart of such satire, which while not overly voluminous was notable, was the correlation between being a virtuoso and being uninterested in

[106] John Evelyn, *Sylva, or, A discourse of forest-trees, and the propagation of timber in His Majesties dominions as it was deliver'd in the Royal Society the XVth of October MDCLXII* (London, 1679), sig. A3v.

[107] Claude Lloyd, 'Shadwell and the Virtuosi', *Publications of the Modern Language Association of America* 44 no. 2 (1929), pp. 472-494.

[108] Hooke, *Diary* (n.14), p. 235; cited in Hunter, *Science and the Shape of Orthodoxy*, p. 113.

[109] *The Tatler*, ed. Donald F. Bond, 3:134 (no. 216, 26 August 1710), 3:155 (no. 221, 7 September 1710) cited in Swann, *Curiosities and Texts*, p. 79.

utility, or as Sprat put it in his *History of the Royal Society*: '*Gentlemen*, free, and unconfin'd'.[110]

This satire has contributed to the historiographic orthodoxy that utility provided the prime motivation for the investigation of nature from the mid-seventeenth century. Utility can be defined, in the context of natural history, as the description of the natural world in a way which would enable society to more efficiently exploit it.[111] While Aubrey and Plot did not employ any rhetoric which could be regarded as exploitative of nature, contemporary writers of local natural histories outside England did so as a matter of course. Gerald Boate's subtitle for his natural history of Ireland, …*Conducing to the Advancement of Navigation, Husbandry, and other profitable Arts and Professions*, perfectly sums up the aims of his work, published in 1657.[112] Among later county natural historians, John Morton was the closest to matching Boate's push for the exploitation of nature. Even here, though, the primacy of describing God's artistry is clear, with understanding (i.e. producing modern facts) and utility both secondary aims:

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[110] Sprat, *(The) History of the Royal Society (of London, For the Improving of Natural Knowledge)*, p. 67.

[111] Withers, 'Geography, science and national identity in early modern Britain: The Case of Scotland and the work of Sir Robert Sibbald (1641-1722)', pp. 31-34.

[112] Boate, *Irelands naturall history being a true and ample description of its situation, greatness, shape, and nature, of its hills, woods, heaths, bogs, of its fruitfull parts, and profitable grounds : with the severall ways of manuring and improving the same : with its heads or promontories, harbours, roads, and bays, of its springs, and fountains, brooks, rivers, loghs, of its metalls, mineralls, free-stone, marble, sea-coal, turf, and other things that are taken out of the ground : and lastly of the nature and temperature of its air and season, and what diseases it is free from or subject unto : conducing to the advancement of navigation, husbandry, and other profitable arts and professions*.

> those who study Nature, to what End soever that be; Whether to take a clearer View of the Infinite Wisdom of the Great Creator, in the Artful Contrivance of so vast a Variety of Organised Bodies, which appears so remarkable in the smallest as in the largest Animals and Vegetables: Or to enquire into the Structure of the Terrestrial Globe, and the Changes it has undergone: Or lastly, to improve or apply Natural Productions of any Kind, to the Uses of Human Life[113]

Aubrey's main role for nature to provide directly useful knowledge was as a conduit for the questions of others, a role that took centre stage in county natural historical enquiry, if not in his own work. He worked with John Ogilby on his initial *Queries in Order to the Description of Britannia*, and indeed improved and extended them in a second edition.[114] He was also instrumental in using his correspondence networks to help Robert Plot circulate his own queries among the gentry of first Oxfordshire, then Staffordshire.[115] Indeed Aubrey was hoping to aid Plot through his natural historical collections 'of [his] own collecting: which [he] daily augment[s]';[116] and read regularly to the Royal Society from letters he had received from correspondents throughout the country.[117] However, little of Aubrey's own work was considered, by either him or posterity, to be 'useful'.

[113] Morton, *of Northampton-shire*, 'preface'.

[114] Daston and Galison, *Objectivity*, pp. 243-244.

[115] John Aubrey, Monumenta Britannica or A Miscellanie of British Antiquities, vol. 1, f. 351; Woolf, 'Godwin, Francis (1562–1633)',

[116] J. W. Saunders, 'The Stigma of Print', *Essays in Criticism* I no. 2 (1951), p. 282.

[117] Birch, *The history of the Royal Society of London for improving of natural knowledge from its first rise. In which The most considerable of those Papers communicated to the Society, which have hitherto not been published, are inserted in their proper order, as a Supplement to the Philosophical Transactions.* , vol. 3, p. 280, vol. 282, pp. 220, 281, 289.

Robert Plot did display inclinations to produce useful knowledge, wanting to contribute 'to the great benefit of Trade, and advantage of the People,'[118] but it is clear throughout that 'the benefit of trade' was not a primary motivation for him, nor any of the other county natural historians.

In terms of the useful knowledge which was produced, the most common was descriptions of the locations and properties of mineral deposits (along with historical information relating to them) alongside the activities of tradesmen in using them. We hear extensively regarding pottery, for example; amongst other things we are told how the clay, after being wrought, is:

> 'set abroad to dry in fair weather, but by the fire in foul, turning them as they see occasion, which they call weaving… After the vessels are painted, they lead them, with that sort of Lead-Ore they call Smithum, which is the smallest ore of all… which gives them the gloss, but not the color… After this is done, they are carried to the Oven… where they are placed one upon another from the bottom to the top.'[119]

This information, though presented as regarding the properties of clay, would be of potential use to those seeking to imitate or converse with potters.

There was the occasional example of directly useful information, especially as regards medical knowledge. For instance, while describing a salt spring at Clifton near Deddington, Plot spends three paragraphs discoursing on the 'Divers … uses of these waters'; these included, 'for cuticular Diseases of Men

[118] Bodleian Library, MS Aubrey 13- Letters to Aubrey, P-Y, William Petty to John Aubrey, 22 August 1685, f. 2.

[119] Plot, *of Stafford-shire*, pp. 123-124.

and Beasts... to improve poor and barren lands... to steep their Corn in before they sow it'.[120] Likewise, the medical uses of various types of clay encountered by Plot on his travels are discussed, from a red clay which does not discolour the hands and may provoke sweating to a 'whitish fat earth' which relieves itching.[121] In a similar manner, particular outcrops of useable minerals are discussed, for instance, a 'very good Lime may be had from... Bladen Quarry... our best limestone must be had at Charleton and Langley'.[122] But most intriguingly, there is a case where Plot found what he believed to be a valuable mineral deposit, unknown to the locals. It was a soft stone, similar in texture and composition to limestone, but twice as easy to process into a useable form, found on the 'Road from Oxford toward London, not far beyond Tetsworth'. He left information regarding the deposit 'with the Son of the ingenious improver, Sir Thomas Tipping', and was not concerned enough with what happened subsequently to even follow up whether it had been used.[123] Documenting the utility and the potential profitable use of resources in this way may have been of interest to the county natural historians, but it was certainly not of primary importance.

The most important aspect of their work, in actuality, and as discussed in chapter one, was the preservation of the world around them, best illustrated by John Aubrey. Following Aubrey's experiences of seeing the landscape and man-made features destroyed through the Civil War, his curiosity was inherently

[120] Plot, *of Oxford-shire*, p. 39.

[121] Ibid., pp. 60-61.

[122] Ibid., p. 78.

[123] Ibid., p. 69.

linked to an instinct to preserve, and to make what he saw available for others. He put this combination best himself: 'How these curiosities would be quite forgot, did not such idle fellow as I am put them down'.[124] Remembering curious things was important to Aubrey, and he felt it should also have been more important to his contemporaries, for instance in 1673 he wrote to his good friend and fellow antiquarian Anthony Wood: 'Oh that men would be but more public spirited and make their hands their Executors and their Eyes their Overseers'[125]. He wanted others to do as he did and donate books and manuscripts to the semi-public collections which were emerging in this period. Likewise, he consistently and regularly called for the transcription and publication of manuscripts:

> There being so good a Press, and so many ingenious Correctors, that [it is incomprehensible why] so many MSS and others almost as rare should lye moth eaten and not be published for the use of the commonwealth of learning[126]

This instinct for the preservation of curiosities was, likewise, indicative of the other county natural historians. As John Norris put it in the prefatory poem to Plot's *of Staffordshire*, it was a virtuous pursuit to 'not only travel ore; The world, but give it light, that others may adore'. This curiosity extended to

[124] Aubrey, *'Brief lives', chiefly of contemporaries, set down by John Aubrey, between the years 1669 and 1696 : Ed. from the author's mss.*, vol. 1, p. 232.

[125] Bodleian Library, MS Wood F 39- Letters to Wood, John Aubrey to Anthony Wood, 23 February 1673/4, f. 255.

[126] Bodleian Library, MS Wood F 39- Letters to Wood, John Aubrey to Anthony Wood, 15 November 1673,

both the wondrous and rare (a type of curiosity well studied by historians) and, unusually and importantly, to the everyday and common.

> being studious to make search after the Rarities both of Nature and Arts afforded in the Kingdome for the Information of the Curious and in order to an Historical account of the same, by him promised hereof to be given, Wee whose Names are subscribed doe approve of that his ingenious undertaking[127]

The quote above, from the testimonial written by the subscribers to *of Oxfordshire* and intended to help Plot solicit help from those he met along his way, demonstrates the intention to record rarities in 'an Historical account'. Rarities reported in the county natural histories ranged from particular "things" (stones, antiquities, animals) to distinctive local practices, such as the building of parts of a church in Brixworth, and a highway from Deanthorpe towards Bulwick, out of a sponge-like, 'factitious' stone, 'such as are often found at the Sides of the petrifying Springs and Brooks' which was described over nearly half a page.[128]

In addition, there are reports of unusual events which had taken place in the area concerned, for instance, we learn that eight years before the publication of Leigh's natural history, he was 'in a small village call'd Elswick, [when] upon a Sunday about Three of the Clock in the Afternoon happen'd a terrible Tempest of Lightning and Thunder, which produced very dismal Effects'. Among these

[127] 'Oxford testimonial to Dr. Plot', in Gunther (ed.), *Early science in Oxford. Vol. 12, Dr. Plot and the Correspondence of the Philosophical Society of Oxford*, pp. 345-346.

[128] Morton, *of Northampton-shire*, p. 158.

effects, Leigh mentions the deaths of two men and paralysing of another, a child getting rickets, along with several other short-term illnesses which were only rectified by Leigh's prompt use of Bleeding and Blistering.[129] There is considerable detail regarding what Leigh saw, heard, felt, and indeed smelt, during the thunderstorm, but, aside from the medicinal, there is no speculation as to cause or repeatability.

It was not only rare objects, special places and particular events which could be of interest to the county natural historians- everyday, and unremarkable, things were also worthy of recording. For instance Morton's *Northamptonshire* informs us which areas of the county had yellow, red, white, almost white, and flint coloured gravel.[130] In a similar case of descriptive verve, Aubrey transcribes all of the gravestones and monuments he comes across in churchyards in Surrey- not just those which were unusual but also the ordinary and repetitive.[131] This was unusual, but by no means entirely restricted to county natural historians; Nehemiah Grew (1641-1712), for instance, expressed an aspiration for an 'Inventory of Nature' covering 'not only Things strange and rare, but the most known and common amongst us.'[132]

The drive for remembrance and preservation was a *moral* imperative to people like Aubrey, born from their personal conception of curiosity and seen as

[129] Leigh, 'Part of a Letter from Dr. Charles Leigh of Lancashire to the Publisher, Giving an Account of Strange Epileptick Fits', vol. 1, pp. 6-8.

[130] Morton, *of Northampton-shire*, p. 82.

[131] Aubrey, *of the County of Surrey*.

[132] Grew, Musaeum Regalis Societatis (London, 1681), pp. 150-1 cited in Hunter, *Science and the Shape of Orthodoxy*, p. 143.

something akin to a religious duty, but also a plausible vocation in contemporary society. Given that the desire for preservation was felt deeply by many gentlemen, county natural historians had potential access to patronage networks, as discussed in chapter one. While their works were intended to glorify God by describing his world, they were, of course, only focusing on a very small part of that world. Given that most county natural historians wrote their first work about either a home county or one in which they lived, some element of authentic "county pride" can be expected. This is particularly the case in the work of John Aubrey, whose childhood memories of Wiltshire certainly had an effect on his presentation of the county in his manuscripts. We can see this pride most clearly in his letters referring to 'that place of [Aubrey's] birth … which I so much love'[133]; 'that place' was Easton Pierse in the parish of Kingston St. Michael in North Wiltshire. His love of the area combined with his general curiosity to form the basis of his county natural historical research. Similarly, Morton's love of Northamptonshire is clear from the fact he resided there throughout his life, despite the considerable difficulties that being away from Oxford and London caused with regard to his natural pursuits.[134]

In addition, it must be remembered that, as discussed extensively in the previous chapter, patronage was central to the careers of the authors. Firstly, and particularly in the cases of the earlier writers Robert Plot and John Aubrey, there was direct patronage- for instance James Bertie (1663-1699), first Earl of

[133] Bodleian Library, MS Wood F 39- Letters to Wood, John Aubrey to Anthony Wood, 13 December 1673, f. 243.

[134] British Library, MS Sloane 4040, John Morton to Hans Sloane, 1703/4, f. 154.

Abingdon and a Lord Chief Justice, was one of Aubrey's most valued patrons,[135] while the Bishop of Oxford and several other local gentlemen acted as Plot's chief supporters. The works produced reflected this support in several ways- Aubrey's manuscripts all contain dedicatory pages, and in Robert Plot's published natural histories, only those families who made major contributions had their arms engraved in colour on the map. In the case of John Morton's *of Northamptonshire*- which was principally financed by subscription rather than patronage - major subscribers were listed separately from other contributors. But most clearly, the support is reflected in the prefaces, which suggest that the works intend to glorify God, and the local gentry should be proud of the areas in which they lived and demonstrate their pride.

In Plot's *of Oxfordshire* we also see an important aspect of local culture reflected in the tribute paid to the King. Oxford, which acted as the Royalist capital for a time during the Civil War, was 'always Loyal', as the dedicatory epistle says. We also see a list of the Royal councils held at Oxford, and several other indications of Royal interest, which are not present in other county natural histories, partly because there were simply more events including the royals worthy of inclusion in Oxfordshire than other counties. Partly, though, this can also be seen as an attempt by Plot to further his own success in patronage networks, an attempt which was eventually successful judging by his later positions; he was registrar to the court of chivalry, notary public and finally

[135] Bodleian Library, MS Wood F 39- Letters to Wood, John Aubrey to Anthony Wood, 21 June 1681, ff. 354-355.

historiographer royal until William's accession following the Glorious Revolution, after which he retired to Kent having accrued enough wealth to live the life of a gentleman.

Conclusion

While the production of county natural histories had personal utility for Plot in furthering his career within patronage networks, the works were not considered useful either in providing profit for individuals, or benefit towards the public good. Neither were they scientifically useful in the sense of using the extensive data gathered to generalise into 'truths', or even 'opinions' about nature.[136] In addition, local phenomena and individual events of the type reported in county natural histories, were largely outside the purview of those natural philosophers who were generalising from specific data, though many were 'curious' about such matters themselves.[137] It was this division between natural history as provider of modern facts to natural philosophers, and natural history as wider cultural form of knowledge, which was to lead to the sudden decline of local natural history in the early-mid eighteenth century. [138]

Local natural history became the preserve, as it is today, of societies such as the Spalding Gentlemen's Society (founded 1714), while local history in

[136] Cook, 'The Cutting Edge of a Revolution? Medicine and Natural History near the shores of the North Sea', pp. 48-49.

[137] Henry, *Knowledge is power*, p. 66.

[138] Although some similar forms of study appear to have been undertaken by Freemasons: Paul Elliott and Stephen Daniels, 'The 'school of true, useful and universal science'? Freemasonry, natural philosophy and scientific culture in eighteenth-century England', *British Journal for the History of Science* 39 no. 2 (2006), pp. 220-228.

general once again became primarily antiquarian in nature.[139] As regards natural history more generally, the rise of what Daston and Galison call "truth-to-nature" rendered the reporting of local particulars largely obsolete; to take botany as an example, Linneaus considered local knowledge as categorically unable to inform a wider conception of nature.[140] This was due to a marked difference in the epistemic qualities of truth-to-nature as opposed to the style of empiricism undertaken by county natural historians, which I have labelled faithful representation.

Truth-to-nature, according to Daston and Galison, was a style of investigation which aimed to produce characteristic exemplars of 'kinds' of natural thing.[141] These exemplars aspired to 'reveal a reality only accessible with difficulty… the true genera of plants and other organisms. The eyes of both body and mind converged to discover a reality otherwise hidden to each alone… to extract the typical from the storehouse of natural particulars'.[142] The job of the naturalist, then, under truth-to-nature, was to observe diligently and use their trained judgement to select the appropriate examples to illustrate the classificatory system which becomes apparent. This could not be more different from the archetype of the county natural historian as outlined in this chapter, who focused upon the particular, upon the different; and who was so obsessed

[139] See Rosemary Sweet, *Antiquaries : the discovery of the past in eighteenth-century Britain* (London, 2004).

[140] Cooper, *Inventing the Indigenous*, pp. 166-167.

[141] Daston and Galison, *Objectivity*, p. 42.

[142] Ibid., p. 58.

with variety that when words failed to distinguish between three particular stones found at Helmdon, had them included on an engraved plate so that the reader could visually distinguish.

Yet the county natural historians were the contemporaries of John Ray, whose work along with that of Martin Lister among others could certainly be interpreted within the "truth-to-nature" epistemic virtue discussed by Daston and Galison. In the brief period covered by this thesis, from the Restoration to around 1720, natural history as both truth-to-nature and faithful representation coexisted with relative ease even within the narrow confines of the Royal Society. Contemporaneously, Boyle's own epistemological attitude to nature as providing a stage on which to experiment, and in turn to generalise from, appears still different. Given that epistemology was a vexed issue in late seventeenth century England due to on-going political and religious turmoil it is perhaps unsurprising that there was no one "dominant" epistemological virtue.

Chapter Four- "the Care and Wisdom of the Great Creator"

> For the invisible things of him from the creation of the world are clearly seen, being understood by the things that are made, even his eternal power and Godhead; so that they are without excuse[1]

The idea that through nature it was possible to glimpse God was a common creed among Protestants. As an illustrative example George Walker (bap. 1582?, d. 1651), one of the Westminster Divines who were involved in writing the strongly Calvinist Westminster Confession of Faith, turned to the quote above from St. Paul to the Romans above and argued that through studying nature his contemporaries were able 'as in a glasse [to] behold the Glory of God with open face (the veil of ignorance being removed)… So often as we behold the visible outward works of God'[2]. That is to say, for Walker the visible world was directly created by God, and in it his glory was openly exposed to individual observation.

In a similar fashion Francis Bacon had earlier argued that that 'natural philosophy is after the word of God at once the surest medicine against superstition, and the most approved nourishment for faith, and therefore she is rightly given to religion as her most faithful handmaid'.[3] Bacon suggests that the investigation and understanding of the natural world is a possibility thanks to the

[1] *King James Bible*, The Epistle of St. Paul the Apostle to the Romans 1:20

[2] George Walker, *God made visible in his workes, or, A treatise of the externall workes of God first, in generall, out of the words of the Psalmist, Psalm 35, 6 : secondly, in particular of the Creation, out of the words of Moses, Genesis, Chap. 1 and 2 : thirdly, of Gods actuall Providence / by George Walker* (London, 1641), pp. 10, 12.

[3] Bacon F., 'Novum Organum / the New Organon', aphorism 89 in Heath, Spedding, and Ellis (eds.), *The works of Francis Bacon*, vol. 4, p. 87.

fact that God 'hath fitted it for the comprehension of man's mind'.[4] Like Walker, Bacon also turned to the Bible for support, pointing in particular to Daniel 12:4 ("Many shall go to and fro, and knowledge shall be increased") which appears on the frontispiece of his *Instauratio magna* ('Great Instauration', 1620). The natural world was taken to be the visible face of the Lord, open to observation by Man through his God-given senses, and therefore Nature took its place alongside the Bible as a path through which to reach religious knowledge.[5]

Despite the centrality of theological discussion in most seventeenth-century explanations and explorations of the natural world, and a plethora of study on the relationships between religion and science from the 1930s through 1980s,[6] religion takes a largely peripheral position in most current mainstream

[4] Bacon f., "Valerius Terminus (ca. 1603)", in ibid., vol. 3, p.221. Also see Benjamin Milner, 'Francis Bacon: The Theological Foundations of Valerius Terminus', *Journal of the History of Ideas* 58 no. 2 (1997), pp. 245-264.

[5] See Peter Harrison, 'Curiosity, Forbidden Knowledge, and the Reformation of Natural Philosophy in Early Modern England', *ISIS* 92 no. 2 (2001), pp. 265-290.

[6] See, for instance: Dorothy Stimson, 'Puritanism and the new philosophy in Seventeenth Century England', *Bulletin of the institute of the history of medicine* 3 (1935); Merton, 'Puritanism, Pietism, and Science'; Douglas S. Kemsley, 'Religious influences in the rise of modern science: A review and criticism, particularly of the `protestant-puritan ethic' theory', *Annals of Science* 24 no. 3 (1968); R. Hooykaas, *Religion and the rise of modern science* (Grand Rapids, Mich., 1972); Lotte Mulligan, 'Anglicanism, latitudinarianism and science in seventeenth century England', *Annals of Science* 30 no. 2 (1973); Webster, *The great instauration : science, medicine and reform, 1626-1660*; Gary A. Abraham, 'Misunderstanding the Merton Thesis: A Boundary Dispute between History and Sociology', *ISIS* 74 no. 3 (1983); Elizabeth L. Eisenstein, *The printing press as an agent of change : communications and cultural transformations in early modern Europe* (Cambridge, 1979), pp. 636-708; Cohen, Duffin, and Strickland, *Puritanism and the rise of modern science : the Merton thesis*; Brooke, *Science and religion : some historical perspectives*; Kroll, Ashcraft, and Zagorin (eds.), *Philosophy, science, and religion in England, 1640-1700*.

histories of science.[7] I argue that for each of the county natural historians, physico-theology was central to their reasons for investigating the natural world, and deeply affected the works produced. This chapter explores the naturalisation of religious values within the landscape in the genre, tracing the theological commitments of the county natural historians. Aubrey, Robinson and Morton all left reasonably clear clues as to their general theological beliefs and the relationship they saw between God and nature, so the chapter will primarily focus upon their work. However, as regards Plot and Leigh their positions are more opaque, so I can only claim to give an indicative argument as to what I, as a reader, took from the style of argumentation used in their works. The physico-theological statements and positions of each of the county natural historians will be situated in the context of wider Latitudinarian conceptions of nature, epitomised by individuals such as John Tillotson (1630-94) and Isaac Barrow (1630-77). First, though, I turn to the historiographic context of this piece and particularly the work of Alexandra Walsham, Peter Harrison and Kevin Killeen.

Firstly, the chapter interacts with the argument of Peter Harrison in his *The Fall of Man and the Foundations of Science* (2007) that the development of what would come to be known as empirical science was contingent upon a changing conception of the fall of Adam and the state of Man- that is, a changing theological anthropology. Harrison suggests that through the seventeenth century the world before the Fall of man, including Adam's perfect knowledge

[7] See for example the short accounts of religion given in textbook studies: e.g. Henry, *The scientific revolution and the origins of modern science*, pp. 85-97; Shapin, *The scientific revolution*, pp. 135-155.

and understanding of the natural world, was increasingly viewed as something which could be restored. The Fall and consequent deficiencies of man thus meant, to most English intellectuals and certainly to Francis Bacon, that knowledge about nature could only be 'accumulated gradually and with meticulous care'.[8] The idea that God was able to act without rules, or use special providence to give it a contemporary term, further encourages empirical observation, as *a priori* reason cannot possibly explain a God who operates without the rules of nature. However, regarding natural history, which is tangential to his main argument, he presents a relatively narrow picture and accepts the well-known narrative that it was intended to provide the particulars for later generalisations.[9] This chapter suggests that, in fact, county natural histories provide strong support for Harrison's argument, particularly pointing to the prefatory poem to Plot's *of Oxfordshire* which presents Plot as reclaiming the knowledge of Adam through exploring and displaying the natural world.

Secondly, the chapter is more widely concerned with the issues surrounding 'special providence', or God's direct and miraculous interaction in nature, which was a topic of much debate through the seventeenth century. Prior to the 1640s, as Alexandra Walsham has shown, the focus of discussions of special providence had been primarily upon punitive actions (storms, earthquakes, etc.), while from the mid-century onwards discussions of 'the multiple manifestations of God's gracious benevolence that surrounded them'

[8] Harrison, *The fall of man*, p. 7.

[9] Ibid., p. 201. On this narrative see chapter three.

became increasingly common.[10] By the end of the century Sussex vicar William Turner's (1652/3-1701) *Compleat history of the most remarkable providences* (1697) argued that the collection of such things would act against possible atheistic tendencies, being clear evidence that 'the ways of God are unsearchable, and his Footsteps cannot perfectly be traced.'[11] For Turner strange occurrences in and on the landscape provided absolute proof of God's existence, and of his inscrutability by humankind. At the same time, by the 1690s references to God's providential actions, such as those in Turner's work, were notably less common.[12]

However, while God's miraculous intervention in the natural world was less commonly discussed as the century progressed, it was still considered possible to detect and examine God through nature, in particular through physico-theology: the exploration of tangible nature to detect God's design of the world. This was not just the glorification and praise of God; but the attempt to theologically come to *know* Him through His works, through the landscape. In

[10] Walsham, *The reformation of the landscape*, pp. 340-375, quote from p. 357.

[11] William Turner and Matthew Poole, *A compleat history of the most remarkable providences, both of judgment and mercy, which have hapned in this present age : extracted from the best writers, the author's own observations, and the numerous relations sent him from divers parts of the three kingdoms : to which is added, whatever is curious in the works of nature and art : the whole digested into one volume under proper heads, being a work set on foot thirty years ago by the Rev. Mr. Pool, author of the Synopsis criticorum* (London, 1697), sig. 3.

[12] Clarence J. Glacken, *Traces on the Rhodian shore; nature and culture in Western thought from ancient times to the end of the eighteenth century* (Berkeley, 1967); John D. Barrow and Frank J. Tipler, *The anthropic cosmological principle* (Oxford, 1986). God's vengeance as a trope had not died out, though, and even in 1750 Gibbons attributed a London earthquake to a lack of piety: 'Hints of Wrath th'Ominpotence behind / - the God / Who struck the angry blow was unador'd / As nature's hidden elemental War' in Thomas Gibbons, *Juvenalia: poems on various subjects of devotion and virtue* (London, 1750), p. 239.

recent historiography physico-theology has been the dominant understanding of the relationship between religion and the study of nature.[13] This school of historiographic thought draws on works such as Charleton, *The Darkness of Atheism,* Matthew Barker (1619-1698), *Natural Theology,* Boyle, *Some Physico-Theological Considerations,* and Ray's *The Wisdom of God* and *Three Physcio-Theological Discourses*, all of which suggest the existence of God-given but inviolable laws of nature. For example in Ray's opinion the natural world was not directly controlled by God, rather He used the agency of plastic nature- a regular and predictable instrument which was entirely subordinate to God's intelligence.[14]

Thirdly, the chapter supports and extends the long historiography referencing the Bible and Nature as "the two books" through which we could come to know God.[15] Both Harrison and Kevin Killeen have pointed in several recent works to the different modes of biblical interpretation and their

[13] Brooke, *Science and religion : some historical perspectives*, pp. 192-225; Neal C. Gillespie, 'Natural History, Natural Theology, and Social Order: John Ray and the "Newtonian Ideology"', *Journal of the History of Biology* 20 no. 1 (1987), pp. 1-49; Scott Mandelbrote, 'The Uses of Natural Theology in Seventeenth-Century England', *Science in Context* 20 (2007), pp. 451-480.

[14] See e.g. John Ray, *The wisdom of God manifested in the works of the creation being the substance of some common places delivered in the chappel of Trinity-College, in Cambridge* (London, 1691), pp. 54-55.

[15] Ernst Robert Curtius, *European literature and the Latin Middle Ages* (New York, 1953); Robert Markley, *Fallen languages : crises of representation in Newtonian England, 1660-1740* (Ithaca, 1993); Benjamin Nelson, 'Certitude, and the Books of Scripture, Nature, and Conscience', in Toby E. Huff (ed.), *On the roads to modernity : conscience, science, and civilizations : selected writings* (Totowa, 1981); Elizabeth L. Eisenstein, *The printing revolution in early modern Europe* (Cambridge, 1983), pp. 185-276.

relationship with the investigation and understanding of nature.[16] In his *The Bible, Protestantism and the Rise of Natural Science* (1998), Harrison had suggested that it was a literal interpretation of scripture, indebted to 'the Protestant approach to the interpretation of texts', which formed the centrepiece of this relationship in the latter seventeenth century.[17] Killeen has recently given a more nuanced view, arguing in *Biblical Scholarship, Science and Politics in Early Modern England* (2009) that Thomas Browne utilised both literal and allegorical modes of interpretation when it came to the bible, and that both were equally important in his study of nature. Killeen therefore argues for a more wide-ranging reciprocal hermeneutics between biblical exegesis and natural study.[18] In doing so Killeen follows earlier work arguing that 'God's word… was *not* equated with the lexical surface of the Bible, nor with the exact wording of any particular passage.'[19] This chapter, while supporting both authors in pointing to the importance of the study of the Bible alongside Nature, argues with Killeen in claiming that it was not only literal interpretations of biblical passages which were invoked. In particular, when it comes to explaining change in the landscape through time, each of the county natural historians utilised Biblical interpretations in both allegorical and literal modes to draw their wider

[16] Also see Harrison, *The Bible*; Philip C. Almond, *Adam and Eve in seventeenth-century thought* (Cambridge, 1999); James J. Bono, *The word of God and the languages of man : interpreting nature in early modern science and medicine* (Madison, 1995), vol. 1: 'Ficino to Descartes'.

[17] Harrison, *The Bible*, p. 8, also see pp. 107-120.

[18] Killeen, *Biblical scholarship, science and politics*; Harrison, *The Bible*, esp. pp. 161-208.

[19] G. B. Christopher, *Milton and the Science of the Saints* (Princeton, 1982).

conjectures; while the physical landscape in which they immersed themselves provided the specific instances through which they displayed God's hand.

The extent of the problems associated with interpreting nature was, to those in the late seventeenth-century, an anthropological issue, an issue regarding man's nature and innate reason. As John Locke (1632-1704) says in *Thoughts Concerning Education*, 'Works of Nature are contrived by a Wisdom, and operate by ways too far surpassing our Faculties to discover, or Capacities to conceive, for us ever to be able to reduce them into a Science.'[20] Indeed in many ways it is the very complexity of the Natural world, as created by God, which makes it a suitable object of worship and investigation. Samuel Clarke (1675-1729), theologian and philosopher who was most active in the early eighteenth-century, explores the limits on the extent to which the observation of nature and man's reason could teach us about God. The observation of nature allowed us to see that there are things we cannot understand: 'that many *invisible* things are real, is evident from the continual Effects of Nature, which are all of them produced by invisible Powers; And from thence the *Being of God*, is strictly *demonstrable*.'[21] However, while the existence of God was demonstrable from nature and reason, the way in which He operated through nature was beyond our capabilities:

[20] John Locke, *Some thoughts concerning education*. Edited by John W. Yolton and Jean S. Yolton (Oxford, 1989), p. 244.

[21] Samuel Clarke, John Clarke, and Benjamin Hoadly, *Sermons on the following subjects* (London, 1732), vol. 7, p. 224.

> in Truth, inanimate Nature is nothing but an empty Sound; Unintelligent Agents and Powers, (as we improperly call them,) are nothing but mere Instruments; and the Whole Effect is really the Operation of Him, who is the Author and God of Nature.[22]

These strong theological beliefs were not all-pervasive, however, and Lorraine Daston has traced how originally pious intentions may lead naturalists, over a generation or two, away from initially credible theological motivations. Her discussion is based around naturalists who were observing specific objects in incredible detail, such as German naturalist Charles Bonnet (1720-1793) who spent seventeen and a half hours a day over twenty-one days observing a single aphid to determine whether it was capable of pathogenic reproduction. He and his fellows ostensibly hoped that their minute observations could act as the bottom rung of a ladder towards observing God's providence, using an argument similar to Clarke's discussed above. However, Daston argues, 'unwavering attention directed to humble objects became an end in itself, infusing them with aesthetic and sentimental value' which was out of all proportion to their importance in contemporary theological discussions.[23]

Daston, along with many recent historians, turns to satire for evidence of the contemporary perception of the transition from credible theology to studying nature as an end in itself. The essayist Joseph Addison (1672-1719)

[22] Ibid., vol. 7, p. 354. Likewise see T. Hobbes, *Leviathan* (London, 1976; orig. 1651), p. 252. 'The principles of natural science were 'so far from teaching us any thing of God's nature, as they cannot teach us our own Nature, nor of the smallest Creature living.'

[23] Daston, 'Attention and the Values of Nature in the Enlightenment', p. 107.

provides perhaps the proto-typical example of this satire regarding the 'new science', remarking that the investigation of the natural world

> makes us serious upon trifles, by which means they expose philosophy to the ridicule of the witty and the contempt of the ignorant. In short, studies of this nature should be the diversions, relaxations, and amusements, not the care, business, and concern of life.[24]

And, in perhaps the most succinct explanation of the potential problem that minute and precise observation could cause, from a letter from the French political author Meric Casubon (1599-1671):

> Men that are much fix'd upon matter and secondary causes and sensual objects, if great care be not taken, may in time … and by degrees forget that there are such things as Spirits, substances really existing and of great power, though not visible, or palpable by their Nature.[25]

On the basis of discussions of such satire and philosophical commentary Daston, as well as Brian Ogilvie, situates the use of religious rhetoric in texts investigating nature as a political response to these critiques.[26] They are correct to point to the potential for accusations of atheism, for instance Henry Stubbe (1632-1676), writing in 1671: 'this mechanical philosophy [of the Royal Society]

[24] Joseph Addison, *The Tatler* (26 August, 1710).

[25] Meric Casaubon and Peter Du Moulin, *A letter of Meric Casaubon D.D. & c to Peter du Moulin D.D. and prebendarie of the same church concerning natural experimental philosophie, and some books lately set out about it* (Cambridge, 1669), p. 30.

[26] Daston, 'Attention and the Values of Nature in the Enlightenment', pp. 106-108; Ogilvie, 'Natural History, Ethics, and Physico-Theology', pp. 93-98.

doth lead to Atheism'[27], which drew an explicit and angry response from Joseph Glanvill (1636-1680) 'some who are more zealous than they are wise endeavor to render the Naturalist suspected of holding secret correspondence with the Atheist.'[28] The problem, then, of accusations of atheism was one which did concern natural philosophers in the latter seventeenth century, leading to the publication of tracts such as Glanvill's *Philosophia pia* which directly addresses the relationship between the experimental philosophy and religion.

While there were undeniably direct responses such as Glanvill's, however, Daston and Ogilvie extend their argument to works of natural history by making the assumption that God was *used* as a political tool to avoid criticism or accusations of atheism, situating Boyle's natural theological discussions in particular as political rhetoric rather than belief. Even John Ray's argument that neither the immense complexity of the human hand nor the regularity of the stars could be explained by anything other than God's design is situated primarily as a response to the 'argumentative context' of the day.[29] This assumption is over-drawn, in my opinion, and has led to the neglect of the religious motivations for the study of, and theological effects of the meaning of nature in

[27] Henry Stubbe, *A reply to a letter of Dr. Henry More (printed in Mr. Ecebolius Glanvil's præfatory answer to Hen. Stubbe.) with a censure upon the pythagorico-cabbalistical philosophy promoted by him* (Oxford, 1671), p. 16.

[28] Joseph Glanvill, *Philosophia pia, or, A discourse of the religious temper and tendencies of the experimental philosophy which is profest by the Royal Society to which is annext a recommendation and defence of reason in the affairs of religion* (London, 1671), pp. 1-2.

[29] Daston, 'Attention and the Values of Nature in the Enlightenment', p. 105; Ogilvie, 'Natural History, Ethics, and Physico-Theology', p. 96.

the period in most recent historiography of natural history and collecting.[30] For Ray in particular, who wrote directly on physico-theology as well as on natural history, the "argument from design" was *both* a heart-felt belief *and* a powerful common-sense political argument that God existed, was infinitely powerful and wise, and should be revered by humans: 'many Phenomena in Nature… being partly above the Force of these mechanic Powers, and partly contrary to the same, can therefore never be solved by them'.[31]

I have come across nothing in the writings of the county natural historians to indicate that they were being insincere, or *using* God at all- indeed the absence of direct reference to Him in most of their writing (with the exception of Thomas Robinson) is notable itself. As such I propose, in the following section, to shift the burden of proof in comparison to that used by Daston and Ogilvie, and suggest that unless we have specific reasons to think otherwise we should generally take early modern authors at their word when they claim pious motivations and make statements regarding religious or biblical interpretation. Thus, I treat the words of Aubrey, Morton, Leigh and Robinson as reasonable indicators of an "honest belief" which was guiding and shaping their actions; if the reader prefers instead to conceptualise them and therefore my

[30] The same assumption had previously dominated landscape studies also: See R.J. Mayhew, *Landscape, Literature and English Religious Culture, 1660-1800* (Basingstoke, 2004), pp. 41-69. This omission has been noted and to some extent rectified by Walsham, *The reformation of the landscape*; Whyte, *Inhabiting the landscape*, chap. 2; William J. Smyth, *Map-making, landscapes and memory : a geography of colonial and early modern Ireland, c.1530-1750* (Notre Dame, Ind., 2006).

[31] Ray, *The wisdom of God*, p. 43. Also see R. J. Berry, 'John Ray, physico-theology and afterwards', *Archives of Natural History* 38 no. 2 (2011).

comments as regarding an idealised or rhetorical 'trope' that is of course their prerogative.

'The Great Magnificence of God'- Description and Display

> as God almighty hath made us reasonable Creatures, he has given us also Power and Authority to exercise those rational Faculties he hath given us. And we cannot make a better improvement of this one essential, and distinguishing Talent, than by searching into the Book of Nature, wherein we may read the lively and most glorious Characters of the Divine Essence, and those Essential Attributes of his Almighty Power and Infinite Wisdom: And when we behold and consider this wonderful Fabrick, this magnificent Palace, wherin we live, the Symmetry and Proportion, the Agreeableness and Conspiracy of its Parts, and how one Thing serves another, we cannot but adore the Almighty and Wise Architect, and the great Rector of the Universe.[32]

This quote, from the preface to Robinson's *Natural History of Westmorland and Cumberland*, neatly sums up the perceived virtue behind his conception of county natural history- the description of God's world. Religion provided all of the county natural historians, with a strong motivation to study the natural world- their curiosity, as well as being encouraged by preservation and patronage, was religiously inspired. However, the exact contours of this inspiration, as mentioned above, varied from individual to individual, as might be expected. Three of the county natural historians in particular have left enough

[32] Robinson, *of Westmorland and Cumberland*, pp. 6-7.

evidence as to their beliefs here to give an informative picture, though even here much is unclear, as will be explored in the following sections. For John Aubrey, it was 'a profound part of Religion to glorify God in his Workes';[33] in the act of description itself he thought he was vicariously exposing the glory of God. Secondly with John Morton, the relationship between God and the landscape was more direct; his work is full of 'instances of the Care and Wisdom of the Great Creator'[34], displaying God's providence. Thirdly, in the case of Thomas Robinson his natural history was printed with a paraphrase of Genesis and moral conclusions 'in support of the Mosaick system of the creation'.[35]

While their differences are notable in themselves and will be explored through the chapter, all of the county natural historians share one thing in common: they did not leave religious self-identifications which are clear to the modern reader. However, especially when it comes to the role of nature, Aubrey, Morton and Robinson, along with, I would argue though the evidence is less clear-cut, Plot and Leigh, can be considered as being within the broad church of Latitudinarianism. While Latitudinarianism is hard to define, despite extensive historical attention,[36] its main aim was to avoid theological factionalism through

[33] John Aubrey, The Naturall Historie of Wiltshire, part 1, f. 8.

[34] Morton, *of Northampton-shire*, p. 315.

[35] Robinson, *of Westmorland and Cumberland*.

[36] Indeed John Spurr denied their existence as a meaningful grouping in John Spurr, ''Latitudinarianism' and the Restoration Church', *Historical Journal* 31 no. 1 (1988). For the discussion see John Walsh and Stephen Taylor, 'Introduction', in John Walsh, Colin Haydon, and Stephen Taylor (eds), *The Church of England, c. 1689-c. 1833 : from toleration to Tractarianism* (Cambridge, 1993), pp. 1-64; W. M. Spellman, *The Latitudinarians and the Church of England, 1660-1700* (Athens, Ga., 1993); Norman Sykes, *From Sheldon to Secker; aspects of English church history, 1660-1768* (Cambridge,

moderation and focus upon the shared, pious heritage of England. As John Tillotson put it:

> to revive the ancient virtue of the Nation, and to bring into fashion again that solid and substantial that plain and unaffected piety, (free from the extremes both of superstition and enthusiasm) which flourished in the age of our immediate Forefathers.[37]

Tillotson, ordained in 1661 and archbishop of Cantebury from 1691 until his death in 1694, was a hugely influential figure in the late-seventeenth-century Church, and just as importantly from our point of view left over fifty published and two hundred manuscript sermons. Over the ten years following his death these manuscript sermons were edited into a fourteen-volume collection by Ralph Barker; and both collections went through several editions through the next three decades. Throughout these sermons we can discern a strong sense of the relationship for Tillotson, who it is reasonable to take as an indicator of mainstream, Low Church, latitudinarianism,[38] between nature and God.

The Latitudinarian relationship with nature was twofold. Firstly, Tillotson argued that 'natural religion', the idea that reasoned thought would lead to a

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1959); John Spurr, *The Restoration Church of England, 1646-1689* (New Haven, 1991); Isobel Rivers, *Reason, grace, and sentiment : a study of the language of religion and ethics in England, 1660-1780* (Cambridge, 1991).

[37] John Tillotson, *The works of the Most Reverend Dr. John Tillotson, late Lord Archbishop of Canterbury: containing fifty four sermons and discourses, on several occasions. Together with The rule of faith. Being all that were published by his Grace himself, and now collected into one volume. To which is added, An alphabetical table of the principal matters* (London, 1735), vol. 1, p. 40.

[38] Isobel Rivers, 'Tillotson, John (1630–1694)', *Oxford Dictionary of National Biography*, 2004. <http://www.oxforddnb.com/view/article/27449> (14 July).

belief in God, was prior to the 'revealed religion' of the scriptures. [39] Secondly, he argued that the observation of nature itself had the potential to prove God's existence:

> In this visible frame of the world, which we behold with our eyes, which soever way we look, we are encountered with ocular demonstrations of the wisdom of God.[40]

The argument, distilled down to its core, is deceptively simple: the world is hugely complex, ordered and astounding; therefore God must have designed it. Hence for Tillotson and his peers the observation of the world took on a strong theological foundation. Indeed, the idea that 'priests [should be] as well skilled in nature as the people',[41] was central to the Latitudinarians, making the strong overlap between the Latitudinarian clergy and the Royal Society unsurprising.[42] For some who were willing to court potential danger by opening themselves to accusations of removing the need for revealed religion, as with Isaac Barrow, a mathematician and theologian, the observation of nature was even given primacy over that of scripture:

> The best (no less convincing than obvious) arguments, asserting the existence of a Deity, are deduced from the manifold and manifest footsteps of admirable wisdom, skill and design, apparent in the general order, and in

[39] Tillotson, *The works*, vol. 2, p. 304; Clarke, Clarke, and Hoadly, *Sermons on the following subjects*, vol. 1, p. 9.

[40] Tillotson, *The works*, vol. 2, p. 551.

[41] Simon Patrick, *A brief account of the new sect of latitude-men together with some reflections upon the nevv philosophy* (London, 1662), p. 24.

[42] Hunter, *Establishing the new science*, esp. chap. 2.

> the peculiar frame of creatures; the beautiful harmony of the Whole, and the artful contrivance of each part of the world.[43]

Robert Boyle likewise presents the investigation of nature as a means of encouraging devotion:[44]

> the two chief advantages, which a real acquaintance with nature brings to our minds, are, first by instructing our understandings, and gratifying our curiosities; and next, by exciting and cherishing our devotion.[45]

However, in the 1670s Boyle, Barrow and others were not merely studying nature to glimpse God, while relying on scripture to provide their understanding, they were making the argument also put forward by Nathaniel Grew in his *of Plants*, that 'Nature, and the Causes and Reasons of Things, duly contemplated, naturally lead us to God'-[46] nature and reason alone could lead to an understanding of godliness. This theological position came alongside a philosophical change in which 'final causes', formerly intrinsic (i.e. within a natural thing, under Aristotelian natural philosophy) had become extrinsic. The combination of theological and philosophical understandings outlined led to the idea that God was the architect, rather than the operator, of the world, being

[43] Isaac Barrow, *The works of the learned Isaac Barrow*. Edited by John Tillotson and Abraham Hill (London, 1741), vol. 3, p. 289.

[44] Explored in Michael Hunter, *Boyle : between God and science* (New Haven, 2009).

[45] Thomas Birch (ed.), *The works of the honourable Robert Boyle in five volumes : to which is prefixed the life of the author*, 5 vols. (London, 1744), vol. 1, p. 423.

[46] Nehemiah Grew and Henry Gore Clough, *The anatomy of plants* (London, 1682), pp. 79-80.

held by a sizeable number of intellectuals in the period.[47] This does not imply a wholesale change: God was still active, in that he set the rules by which the Earth operated, and his presence could still be determined and seen in the world around us by the investigation of nature. But, compared to the Westminster Confession of Faith, which stated 'God, in his ordinary providence, maketh use of means, yet is free to work without, above, and against them, at his pleasure'[48], implying a God that could and did intervene at will and therefore at least partially negating the value of natural study, this was a notably different approach.

John Aubrey's religious inclinations are hard, if not impossible, to map precisely despite the historical attention lavished on him over the years, with both Michael Hunter in his 1975 biography, and Samuel Mendyk suggesting that Aubrey was an exponent of 'a sort of natural theology'.[49] The difficulty in forging a clear identity for him could be because his only book on the topic, which was entitled either 'The Foundation of Ethics and the Ladder of Religion' or 'Religio Naturalis, or a Scale of the decay of the Christian Religion, with a prospect or foresight where it will settle', has been lost;[50] and could also be because his religious views appear to have changed significantly through the course of his

[47] Margaret J. Osler, 'Whose Ends? Teleology in Early Modern Natural Philosophy', *OSIRIS* 16 (2001), pp. 163-164.

[48] 'Westminster Confession of Faith', *Center for Reformed Theology and Apologetics*, <http://www.reformed.org/documents/wcf_with_proofs/> (4 August).

[49] The quote appears in both Hunter, *John Aubrey*, pp. 57-58; Mendyk, *'Speculum Britanniae'*, pp. 174-175.

[50] Bodleian Library, MS Aubrey 5, John Aubrey, a list of works drawn up for Lhwyd in 1692, f. 123v; Bodleian Library, MS Top. Gen.c.24, John Aubrey, a list of manuscripts deposited with Hooke in 1690, f. 13v.

life. He would certainly have fitted within the Latitudinarian Church at most times, as evidenced by the suggestion from his friend Charles Snell that, shortly after Aubrey's financial ruin, he should take orders and become a parish priest.[51] Likewise, the general tone of his work is moral, pious, but neither in keeping with the High Church focus on saving grace, nor the intense scriptural focus of most other Protestant sects of the time. His writings on education and correspondence in particular focus upon shared virtues like 'justice and charity',[52] and idioms such as 'do as you would be done to'.[53] An attempt to position him precisely would, in my opinion, be futile; but when it comes to the relationship between the landscape and God Aubrey was reasonably clear: he was on the modern, Latitudinarian side of the debate, believing that it was not a 'sin to search into the ways of nature' as it had been, by his account, prior to the Restoration.[54]

As well as mentioning the lack of moral reasons *not* to investigate nature, Aubrey from time to time discourses upon the explicitly religious motivations he felt *to* investigate the world around him. For instance, when writing to Anthony Wood regarding the compilation of his notes and further

[51] Bodleian Library, MS Aubrey 23- John Aubrey, *Collectio Geniturarum*, Charles Snell to John Aubrey, 12 August 1676, ff. 116-117.

[52] Bodleian Library, MS Wood F 39- Letters to Wood, John Aubrey to Anthony Wood, 17 November 1670, f. 128v.

[53] John Aubrey, An Idea of Education of Young Gentlemen and Idea Filioli seu Educatio Pueri, f. 132.

[54] John Aubrey, The Naturall Historie of Wiltshire, part 1, preface, unpaignated.

research he was undertaking in his home county of Wiltshire around 1670, Aubrey says:

> I do not know how or why, methinks, but I have a kind of divine impulse to have it done; nobody else will do it. And when tis done none of these parts will value it, but the next generation I hope will be less brutish.[55]

Here, not only is Aubrey claiming some sort of personal, religious or God-given inspiration, he is also telling Wood that there is not a social, or economic, reason for the project he was pursuing at the time. The front cover of his manuscript copy of the natural history of Wiltshire, lodged in the Royal Society, also indicates the intention of his local natural historical work to expose the glory and wonder of God, with two quotes from the Psalms which demonstrate how Aubrey conceptualised the relationship between his 'divine' impulse and the investigation of the natural world. He saw his efforts as producing a body of research which focused upon the description and exploration of God's world in an effort to consider the glory, depth, and antiquity thereof:

> O Lord, how glorious are Thy works: Thy thoughts are very deep. An unwise man doth not well consider this: And a fool doth not understand it.[56]
>
> I will remember the works of the lord: and call to mind thy wonders of old time.[57]

[55] John Aubrey to Anthony Wood, 17 November 1670, f. 128.

[56] *King James Bible*, The Book of Psalms 92:95, 96.

[57] Ibid., The Book of Psalms 77:11.

Personal motivation, or simple "interest" in the landscape, was infused for Aubrey and many of his contemporaries with religious meaning. The lack of a consistent or explicit engagement with religion should not be taken as a lack of pious concern; the assumption that the landscape was God's creation was self-evident to Aubrey, and an interest in its description did not require justification. Likewise, when Robert Plot says in his preface to the reader that he began research into the natural history of Oxfordshire 'for [his] own pleasure, the subject of it being so pleasant, and of so great variety' I would argue that we can read-through religious intent as at least a partial underpinning to this 'pleasure'. While Plot does not often explicitly refer to God, the impression which this reader is left with is that his religious inspiration was similar to Aubrey's; the poem written 'to Dr. Plot on his Natural History of Staffordshire' by John Norris (1657-1712), fellow of All-Souls,[58] and inserted as a preface to Plot's *Staffordshire*, gives an indication which I believe represented Plot's views as well as Norris', though we cannot read through directly. The poem opens:

> What strange *Peversity* is this of *Man*!
>
> When t'was a *Crime* to taste th' i*nlightening* Tree
>
> He could not then his hand refrain,
>
> None then so *inquitisive*, so curious as *He*:
>
> But now he has liberty to try and know
>
> God's whole *Plantation* below[59]

[58] W. R. Sorley, 'John Norris and his Ideal World, in John Locke', in A.W. Ward, et al. (eds), *The Cambridge history of English and American literature* (Cambridge, 1907-21).

[59] J. Norris, 'To Dr. Plot on his Natural History of Staffordshire'. in Plot, *of Stafford-shire*.

Norris continues in a similar tone, giving a conception of humanity as morally obliged to be curious about the world that God created; in earlier times religious law had held back the investigation of God's landscape and now, though given liberty, 'sedentary' and 'dull souls' still held/hold us back.[60]

Such Ignorance can ne'r Devotion raise,

They will want *Wisdom*, and their *Maker Praise*.

The argument running through Norris' poem is that the best way to praise God is through exploring 'the great *Magnificence* of God'- the natural world. Indeed, not only exploration, 'but display', was a moral imperative as projected by the poem. As earlier quotes have suggested, this exploration was to lead to the recovery of Adamic knowledge, that knowledge which was lost through the Fall. The penultimate stanza of the poem brings in 'our learned author', Plot himself, in dedicatory style:

In th'head of these *Heroic* Few

Our *Learned Author* first appears in view,

Whose searching *Genius* like the *Lamp* of day

Does the Earth's furniture display,

Nor suffer's to lie buri'd and unknown

Natures rich *Talent*, or his *own*.

Drake and *Columbus* do in thee revive,

And we from they Research as much receive,

[60] On curiosity see discussions in chapter two and esp. Harrison, 'Curiosity, Forbidden Knowledge, and the Reformation of Natural Philosophy in Early Modern England'; Benedict, *Curiosity : a cultural history of early modern inquiry*, pp. 245-254; Daston and Park, *Wonders and the order of nature*, pp. 305-328.

Thou art as great as they, for tis all one

New Worlds to *find*, or nicely to describe the *known*.

The motivation to study God's world in order to recover Adamic knowledge of 'God's whole *Plantation*', was highlighted in Peter Harrison's recent *The Fall of Man and the Foundations of Science*, which argues that the development of what would come to be known as empirical science was contingent upon a changing conception of the fall of Adam. Harrison suggests that through the seventeenth century the pre-lapsarian world was increasingly viewed as something which could be restored, at least in terms of our knowledge of the natural world.[61] George Walker's *History of the Creation*, published in 1641, provides an illustrative example: 'in the state of innocency in the first creation, *Man had perfect natural knowledge of* all natural things'.[62]

Taking this motivation as an underlying principle of county natural history, as was argued in Chapter Two, helps explain the absence of direct reference to God in Plot's work, as well as many sections of Aubrey's, despite what I would argue is His importance in the works' conception and meaning. For instance Aubrey only referred to religion explicitly on a regular basis when discussing the decoration of buildings, the history of which was seen as worthy of preservation: 'When I came to Oxford crucifixes were common in the glass of study windows; and in the chamber windows were canonized saints… Now, no

[61] Harrison, *The fall of man*, passim.

[62] George Walker, *The history of the creation as it is written by Moses in the first and second chapters of Genesis : plainly opened and expounded in severall sermons preached in London : whereunto is added a short treatise of Gods actuall Providence in ruling, ordering, and governing the world and all things therein* (London, 1641), p. 193.

religion to be found.'[63] This is exemplary in indicating that, by 'religion', Aubrey was referring to the *direct* signs of God's worship by man; rather than the worship of God through studying nature which was seen as entirely self-evident by Aubrey. Also, God was directly invoked by Aubrey when dealing with things beyond the compass of human understanding, though the examples of these might seem strange to modern sensibilities. In a manuscript collection of his writings on folklore and superstition 'very offensive' eyes of some people were explained as follows: 'there is something divine in it, more than every one understands'[64]. Divinity and religion, that is to say, were only invoked directly when there was not an alternative natural explanation which could be used.

Had the county natural historians believed that special providence, the inexplicable and irregular interference of God in nature, was a suitable subject to include in a county natural history, then, reports of special providence would have been included as "religion" in their works. They each, apparently, did not; but from around 1670 to the end of the century, there were a number of attempts by other authors to prove special providence existed, and its use by God in specific instances. The main form that this took was compilations of historical and contemporary events, showing instances of God displaying his wrath through storms and earthquakes, or his grace through miracles.[65] While

[63] Richard W. Barber (ed.), *The worlds of John Aubrey : being a further selection of Brief lives, together with excerpts from his writings on antiquities, science and folklore* (London, 1988), p. 187.

[64] Ibid., 'on folklore and superstition', p. 288.

[65] Jankovic, *Reading the skies : a cultural history of English weather, 1650-1820*, p. 192. Also see Walsham, *The reformation of the landscape*, pp. 386-387, 443-485.

not including any in his natural historical works, Aubrey in his *Miscellanies* (1696) gives several clear examples of God acting through special providence, controlling the weather to put across a message pertinent to the political situation in which Aubrey was writing. To cite two illustrative examples regarding the Restoration, and the coronation of James II in 1685:

> King Charles II was crowned at the very conjunction of the Sun and Mercury; Mercury being then *in corde solis* [the heart of the sun]. As the King was at dinner at Westminster Hall, it thundered and lightened extremely. The canons and the thunder played together.[66]
>
> The canopy (of cloth of gold) carried over the head of King James II… was torn by a puff of wind as he came to Westminster Hall; it hung down very lamentably: I saw it… When King James II was crowned… It was a windy day, and the wind presently took the flag half off, and carried it away into the Thames… The top of his sceptre (fleur-de-lis) did then fall.[67]

In both these cases the weather acts to represent the politico-religious commentary upon the coronation of a king, as assigned by Aubrey and his contemporaries. The "Glorious Revolution" is another particularly clear example where folklore associated political change with the weather. A change in the wind direction (from westerly to easterly) in November 1688, came alongside a more conducive political environment in inviting William of Orange to invade. Simultaneously, the wind pinned the navy into Gunfleet while its leaders

[66] Barber (ed.), *The worlds of John Aubrey : being a further selection of Brief lives, together with excerpts from his writings on antiquities, science and folklore*, 'miscellanies', p. 261.

[67] Ibid.

(mistakenly) believed they were outmatched, meaning they did not have the will to fight it. The coincidence of weather and political shift, which now would be dismissed by most as just that, a coincidence, was then a sign from God: hence the lasting nickname of the easterly wind as "the Protestant wind".[68] As Gilbert Burnet (1643-1715), Bishop of Salisbury, put it when writing *The History of My Own Time*: 'the strange ordering of the winds and seasons, just to change as our affairs required it, could not but make deep impression on me, as well as on all that observed it.'[69]

Robinson in particular among the county natural historians noted that the same could be said of occurrences at physical places which were known for their spiritual importance. Robinson in the quote below is following earlier authors in discussing the emblematic properties of a place and an object.[70] However, it is clear that he himself is ambivalent regarding the veracity of such meanings- he is reporting them as narratives for the reader's consideration, with no inherent credibility attached to them beyond it being discussed in the area.

> Cross-Fell… was formerly called Fiends-Fell, from evil Spirits which are said in former Times to have haunted the Top of this Mountain; and continued their Haunts and Nocturnal Vagaries upon it, until St. Austin, as is said, erected a Cross, and built an Altar upon it, whereon he offered the Holy

[68] For a discussion of the change in the political situation, see Steven C. A. Pincus, *1688 : the first modern revolution* (New Haven, 2009), chap. 8, 'popular revolution', pp. 221-253.

[69] Gilbert Burnet et al., *Bishop Burnet's history of his own time* (London, 1724), vol. 1, pp. 789-790.

[70] See previous discussions on this in chapter three. Also Ashworth, 'Natural History and the Emblematic World View'; Ashworth, 'Emblematic natural history of the Renaissance'.

> Eucharist, by which he countercharmed those hellish Fiends, and broke their Haunts. / Since that time it has had the Name of Cross-Fell, and to this day, there is a heap of Stones, which goes by the Name of the Altar upon Cross-Fell. This is an old Tradition that goes current among the Neighbourhood, but the Reader may choose whether he will give it Credit or not.[71]

John Morton went a step further than Robinson and actively critiqued the prior narratives attached to the places he was investigating. To give one example regarding petrifying waters, which are able to seemingly transform any object they touched into rock. In the mid-seventeenth century these were commonly held to have religious (even miraculous) properties; properties which however implausible to the author would be faithfully recorded in natural historical and antiquarian literature.[72] When they were examined in several locales by John Morton, though, not only does he omit to mention the religious dimension of earlier understandings, he explains that the waters must have picked up 'sparry and stony matter' in the course of their journey to the surface of the earth, entirely naturalising a formerly miraculous phenomenon.[73] But this naturalisation carried with it a new semantic importance, for not only were these springs comprehensible as natural phenomenon, they had been placed around the county by God in such a way as to ensure all had access to a wide variety of medicinal cures. So Morton not only lists the physical properties of different

[71] Robinson, *of Westmorland and Cumberland*, pp. 39-40.

[72] Walsham, *The reformation of the landscape*, pp. 502-504.

[73] Morton, *of Northampton-shire*, p. 270.

types of petrifying water, he also cites examples of doctors who have witnessed them do 'real services… [to] the Drivers of it in diverse Distempers.'[74]

Fossils and the Universal Deluge: Physico-Theology in Practice

The county natural historians, then, situated the landscape as created by God, not only in the sense of setting the laws of nature, but also in the design of the landscape and the distribution of resources within the localities they explored. As such, a corresponding aim of their work was to reconcile the world before them with the Bible- that is, to utilize the reciprocal hermeneutics discussed by Kevin Killeen. This section turns to the debates regarding fossils and the universal deluge, which were particularly active in the period from 1681 to 1713, as exemplary of this reciprocal relationship. It will demonstrate that the examination of fossils was intricately laced with a conception of physico-theology centred upon the Biblical Flood. Each of the county natural historians discussed the place of fossils in their work, and the views they expressed will be discussed briefly in turn, before a more in-depth interrogation of how Robinsons' conception of fossils interacted with a wider conception of God's creation.

Fossils in the period were defined as 'all bodies whatever that are dug out of the Earth'- the only distinction being between those native to the earth and those 'adventitious… foreign… extraneous.'[75] In the latter seventeenth century there was a debate as to whether these fossils were organic creatures, deposited in

[74] Ibid., p. 274.

[75] John Harris, *Lexicon technicum, or, An universal English dictionary of arts and sciences explaining not only the terms of art, but the arts themselves* (London, 1704), 'fossils'.

the mountains in which they were found by the universal deluge or other circumstances; or alternatively whether they were naturally occurring "formed stones" which were mirroring or simply resembled known natural creatures. The county natural historians, we will see, were ranged on both sides of the key issues, and utilised both physico-theological and biblical criticism to make their arguments. It is worth noting with reference to previous chapters that this was one area in which their observations were not simply descriptions made with fidelity- in many ways they are best considered 'modern facts' in the sense of being used to move an argument about God's world.

The particular debate on which Aubrey, Plot, Morton, Leigh and more particularly Robinson commented in their work was sparked by the publication, in 1681, of the first part of clergymen Thomas Burnet's *Tellius theoria sacra*. Burnet was recommended by Tillotson, then dean of Canterbury, as a tutor for the Duke of Ormond's grandson in 1681, and was an interesting link between the clergy and the laity: 'always in a lay-habit… [but] his conversation and manners were worthy of a clergymen in all respects'[76]. His writings reflected this, with a clear religious imperative alongside a focus upon understanding nature, which for Burnet was elevated to a more powerful position than man: 'Vain Man hath no power over external Nature.'[77] Translated and expanded into English three

[76] Thomas Carte, *The life of James, Duke of Ormond : containing an account of the most remarkable affairs of his time, and particularly of Ireland under his government ; with appendix and a collection of letters, serving to verify the most material facts in the said history* (Oxford, 1851), vol. 4, p. 683.

[77] Thomas Burnet, *The theory of the earth: containing an account of the original of the earth, and of all the general changes which it hath already undergone, or is to undergo :*

years later as *Theory of the Earth*, his *Tellius theoria sacra* dealt with the deluge and dissolution of the earth due to the Flood as well as with primeval earth and paradise.

Burnet's main innovations, and the reason the work was so central to debates over the following thirty years, was his strong focus upon the importance of the Flood as part of a wider chronology of how the Earth came to be in its present state. He suggested that the earth, when first created, was surrounded with water on which oil floated, and above which was a globe of dust-filled air; the descent of this dust created a level, smooth, global paradise. The shape of the earth itself was also different from that known in the seventeenth century, being smooth, uniform, and somewhat egg-like (oval but with flattened sides). At the same time a different alignment of the Earth's axis generated perpetual spring, and Rivers flowed from the poles towards the equatorial regions. In short, Paradise was paradise. Burnet situated the contemporary earth as a 'broken', ruined, 'unshapen' version of its former self, made so by the Flood which was caused by the fracturing of this surface freeing the waters from the abyss beneath and so creating the modern, corrupted and varied, world with its mountains and seas. Post-flood the corrupted earth was largely unchanging, before the projected and future arrival of the great conflagration which would produce a new 'face of nature'.[78]

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the two first books concerning the deluge and the paradise (London, 1684), pp. 310-311. On this see Bowen, *Empiricism and Geographical Thought*, pp. 108-110.

[78] Burnet, *The theory of the earth*, dedication, pp. 325-326.

Around the 1690s, the Biblical Flood took its position alongside the Fall as central to the discussion of nature. In addition to the natural theological discussion which follows, Burnet's work impacted heavily upon contemporary natural philosophical debates, for instance regarding the volume of water involved in the Flood or the exact shape of the Earth.[79] However, while this discussion was particularly common in this period it had emerged earlier, and continued later. Camden himself had discussed whether some fossil which resembled sea cockles found in Richmondshire Mountains were 'Miracles of Nature' or 'certain signs of an universal deluge in the time of Noah.'[80] His contemporary, the cartographer John Norden whose work was discussed in chapter one, thought that a tower of granite slabs known as the Cheese-Wring was 'no otherwise pyled up than they were left at the universal inundation.'[81] And in the mid-eighteenth century the travel writer James Hanway remarked on Stonehenge: 'we contemplate them on a supposition of their having been once enboweled in the eath, just where they stood, the soil washed down from them by the deluge.'[82] The discussion of the Flood, then, while it was particularly active in the wake of Burnet's work through the 1690s and early eighteenth century, spanned a far longer time period.

[79] John Beaumont, *Considerations on a book, entituled The theory of the earth* (London, 1693); Johann Caspar Eisenschmidt, *Diatribe de figura telluris elliptico-sphaeroide* (Argentoratum, 1691).

[80] Gibson, *Camden's Britannia*, p. 758.

[81] J. Norden, *Speculi Britanniæ pars: a topographical and historical description of Cornwall* (1728), p. 95.

[82] J. Hanway, *A journal of eight days journey from Portsmouth to Kingston upon Thames, with miscellaneous thoughts, moral and religious, in a series of letters: To which is added, and an essay on tea* (London, 1756), p. 101.

Burnet's central claim, as read by most recent historians, was that observations of the natural work could be 'writ with a sincere intention to justify the Doctrines of the *Universal Deluge*, and of *Paradise*.'[83] A thorough understanding of nature, for Burnet, was as important as a textual understanding of the Bible. However, the biblical side of this equation should not be overlooked. In telling the story of the creation as he did, Burnet read Genesis as a simplified account of the creation, preferring the account of the earth given in 2 Peter which gives far more room for a chronological and historical understanding. His reasoning, made explicit in correspondence with Isaac Newton shortly before the work's publication, was that Genesis was adapted and simplified by Moses for the benefit of primitive Israelites.[84] So Burnet, who represents the height of physico-theology, was himself involved in a dual discussion: about nature and about the Word of God (the bible), entirely supporting the arguments of Kevin Killeen regarding the reciprocal hermeneutics in operation.

John Aubrey, in his manuscript natural history of Wiltshire, refers directly to Burnet's *Tellius theoria sacra* in 'An Hypothesis of the Terraqueous Globe. A digression.'[85] In one particular area he criticises Burnet- that of the earth's changeability in the period since the Flood. Aubrey points to the on-going

[83] Burnet, *The theory of the earth*, 'preface'.

[84] Scott Mandelbrote, 'Burnet, Thomas (c.1635–1715)', Oxford Dictionary of National Biography, 2004. <http://0-www.oxforddnb.com.pugwash.lib.warwick.ac.uk/view/article/4067> (14 January). Newton, while respectful, disagreed with the theological critique offered

[85] John Aubrey, *Aubrey's natural history of Wiltshire: a reprint of The natural history of Wiltshire*. Edited by J. Britton and K. C. Ponting (Newton-Abbot, 1969), pp. 46-47.

changes in the Earth. As an example of this, he included several cuttings from the *London Gazette* regarding Italian earthquakes in 1688 and 1690. Earthquakes not only point to the fact that the Earth is still changing, they also provide a clue which can to his mind unify much of Burnet's eschatology:

> As the world was torne by earthquakes… as also the vaulture by the time foundered and fell in, so the water subsided and the dry land appeared… Then, why might not that change alter the centre of gravity of the earth? Before this the pole of the ecliptique perhaps was the pole of the world.[86]

While he disagrees with the idea of a static post-Flood earth as put forward by Burnet, Aubrey agrees with most of his other substantive propositions: there was a universal flood; the bible should not be interpreted literally when it comes to natural philosophy; and we can see evidence of the process of God's creation through the study of nature. Again, like Burnet, Aubrey takes a non-literal reading of Genesis. In justifying this, he quotes Timothy c. 3 v. 15: 'from a child thou hast known the Holy Scriptures, which are able *to make thee wise unto salvation*', on which Aubrey observes 'the Apostle doth not say, *to teach natural philosophy*: and see Pere Symond, where he says that the scriptures in some places may be erroneous *as to philosophy*'.[87] The scriptures, for Aubrey, provide the ultimate guide to salvation, but are incomplete in themselves as regards the operation of God's world. Man must study nature to understand this aspect of the Divine Will.

[86] Aubrey, *The Natural History of Wiltshire*, p. 47.

[87] Ibid.

Those historians who have noted Aubrey's views regarding the Earth have largely situated them as forward-looking, pointing to his stratigraphy and interest in geological maps in contrast to the contemporary acceptance of biblical chronology.[88] However, we need to remember that when Aubrey was looking at stratigraphic evidence, or calling for a geological map of England, he was doing so with the intent of exploring God's creation and explaining the Divine Will in alliance with the study of the Bible. Hence Aubrey, like most of those involved in the debate regarding Burnet's *Theory of the Earth*, saw the Universal Deluge as central to our understanding of the Earth's chronology. The deluge became, in particular, central to the contemporary understanding of fossils, the argument about which was best summed up by Robert Plot:

> Whether the stones we find in the forms of Shell-fish, be Lapides sui generis, naturally produced by some extraordinary plastic virtue latent in the Earth or Quarries where they are found? Or whether they rather owe their form and figuration to the shells of the Fishes they represent, brought to the places where they are now found by a Deluge, Earth-quake, or some other such means, and there being filled with mud, clay, and petrifying juices, have in tract of time been turned into stones, as we now find them, still retaining the same shape in the whole, with the same lineations, sutures, eminencies, cavities, orifices, points that they had whil'st they were shells?[89]

[88] Hunter, *John Aubrey*, pp. 58-59.

[89] Plot, *of Oxford-shire*, p. 111; Archibald Geikie, *The Founders of geology* (London, 1905), p. 77.

Plot fell 'rather to the opinion of Mr. Lister, that they are Lapides', or naturally created objects.[90] He elaborates on this in his second work, giving a total of seven reasons that formed stones cannot be the remains of previously living organisms.[91] This is why Hamshaw Thomas, among others, refers to him as 'one of the last champions of the old views [regarding fossils] in England.'[92] John Aubrey, on the other hand, took the position that fossils were the remains of living organisms, though it was not something that he expanded on in detail in his county natural historical collections or writing- he just alluded to his agreement with John Ray, who had thought through and published on the theory of the earth more explicitly.[93]

Ray, in public writings, held that the species of the earth were fixed, a necessary corollary of which is that fossilised remains, if organic, would be of species which could be found by contemporaries. His *Wisdom of God*, according to a footnote in Harrison, was written in the 1650s;[94] but was first published in 1691 and went through 12 editions thereafter up until 1759. Like Burnet and Aubrey, Ray wrote of Nature as the Work of God:

> My text warrants me to run all over the visible Works of God in particular, and to trace the Footsteps of his Wisdom in the Composition, Order,

[90] Plot, *of Oxford-shire*, pp. 111-112.

[91] Plot, *of Stafford-shire*, p. 182.

[92] H. Thomas, 'The rise of geology and its influence on contemporary thought', *Annals of Science* 5 no. 4 (1947), p. 328.

[93] John Morton to Edward Lhwyd 25 May 1696, Correspondence between Morton and Lhwyd, ff. 412-413.

[94] Harrison, *The fall of man*, p. 221, n. 126.

> Harmony, and uses of every one of them through the collection of particulars.[95]

However there was an interesting contradiction between Ray's public statements that the number of species was fixed, and his correspondence with Edward Lhwyd which suggested that the examination of unidentifiable fossils was likely 'to overthrow the opinion generally received… that since the first Creation there have been no species of Animals or Vegetables lost, no new ones produced.'[96] Regarding the method of the Creation itself Ray did not give a clear opinion, though in his correspondence with Lhywd he did situate his discussion in relation to Woodward, whose opinions he thought to be 'a plausible conjecture'.[97] Woodward's intellectual interests were comparable to those of the county natural historians. While best known for his views on fossils he was also an avid antiquarian, using evidence gathered to put together an early history of mankind; in everything he did there was a closer interest in systematisation than particulars. His *Essay* (1695) aimed to prove 'the Superintendence and Agency of Providence in the Natural World: as also to evince the Fidelity and Exactness of the Mosaick Narrative of the Creation, and of the Deluge'.[98] During the flood, it says, everything dissolved into a mass of liquid, rock, and organic matter which settled into sedimentary remains: hence sedimentary rocks. This is another

[95] Ray, *The wisdom of God*, 'preface'.

[96] Ray to Lhwyd in Gunther (ed.), *Further correspondence of John Ray*, p. 260.

[97] Ray to Lhwyd in ibid., p. 256.

[98] J. Woodward, *An essay towards a natural history of the earth, and terrestrial bodies, especially minerals: as also of the sea, rivers, and springs. With an account of the universal deluge: and of the effects that it had upon the earth* (London, 1723), 'preface'.

instance of direct utilisation of the bible alongside the observation of the natural world in order to draw out physico-theological theory. There was a huge response to this work, including by some who suggested that there were actually numerous floods, not just the Deluge. The evidence for this came from problems with reconciling the order in which stratigraphic deposits occurred in different places with Woodward's work or the Bible, in particular due to the fact that in some areas basalt/granite overlay sedimentary deposits which would not have happened had Woodward been correct.[99]

Charles Leigh, in of his *of Lancashire*, made his opinion regarding Woodward's theories particularly clear:

> An Universal Deluge is fully demonstrated from several Topics; but that there was a total Dissolution of the whole Strata of the Earth at that time, is proved impossible, both from Scripture and Observations in Nature: Whence tis evident, Dr. Woodward's Hypothesis is Erroneous[100]
>
> Several hundred Fathom above the surface of the Sea… all sorts of marine Shells… which doubtless, considering the immense height of the Mountain, could not be deposited there by any means but a Deluge, and that an universal one.[101]

Leigh was certain that fossils were organic in origin, and that the deluge was complete; his justification of this was based primary on biblical sources.[102]

[99] For example Leonard von Buch and Georges Cuvier

[100] Leigh, *of Lancashire, Cheshire, and the Peak*, 'preface to the reader'.

[101] Ibid., p. 62.

[102] Ibid., pp. 100-101.

There were only two exceptions, in Leigh's mind, to the idea that organic remains were deposited by the deluge: plants (made by chemical processes) and certain formed stones (formed by 'ovism', the development of animal eggs).[103] The discussions regarding fossils, then, were both biblical and natural historical in nature, the two forms of argument were symbiotic and nature on its own was insufficient for any meaningful discussion.

John Morton, of the county natural historians, was the one who was most interested in the debate surrounding the meaning of fossilised remains he found- probably in part due to his extensive correspondence with Lhwyd from 1694 to 1709, along with occasional trips together looking for them.[104] One result of this was that nine of the fourteen plates in *of Northamptonshire* are of fossils, which Morton, like Leigh and Aubrey, argued had organic origins. In Morton's opinion, Northamptonshire excelled all other counties in the number of fossils to be found. The 'turbinated' nature of the fossils, according to Morton, made it clear that they were sea-shells and that the biblical flood had carried animals in-land, which had by petrifaction become fossilised.[105] This was a case of the evidence of objects, combined with some reasonable, and simple, deduction, being used in conjunction with biblical knowledge to explain a strange occurrence.

[103] Ibid., pp. 99, 119-120.

[104] Correspondence between Morton and Lhwyd, ff. 397-443.

[105] Morton, *of Northampton-shire*, pp. 258-261.

"All Thy Marvellous Works": The Landscape and Man

Thomas Robinson, rector of Ousby, appended 'A vindication of the philosophical and theological paraphrase of the mosaick system of the creation' to his *Natural History of Westmorland and Cumberland*.[106] This paraphrase of Genesis demonstrates Robinson's views on the creation of the world, for instance when discussing Genesis 1:1 Robinson has God as the efficient cause creating the world out of nothing.[107] However, as with our knowledge of nature, our knowledge of the Bible can according to Robinson only go so far:

> most of the Learned Interpreters, as well Ancient as Modern, have compared the Holy Scriptures to Waters; wherein the Lamb may Wade, and the Elephant may Swim, i.e. some Passages in the Sacred Scriptures (especially such as concern the necessary Rules of Life) lie level with the meanest Capacities; whereas, there are other Passages too deep for the Profoundest Judgments: Among which, we must count this of the Creation.[108]
>
> we may reasonably suppose that the Mosaick Writings were grounded upon Divine Revelation, as well as upon Philosophical Principles…[and because Moses was trained in the Jewish faith, which taught by parable in the evangelical faith] it seems Conclusive, That this Short and Comprehensive History of the Creation, is Philosophical and Mystical, as well as Historical and Ad Hominem.[109]

[106] Robinson, *of Westmorland and Cumberland*, 'title page'.

[107] Ibid., 'vindication', pp. 13-16.

[108] Ibid., 'vindication', p. 4.

[109] Ibid., 'vindication', pp. 10-11.

One area on which he focuses, in which the discussion is directly related to the chronological landscape, is that of the mountainous landscape, particularly important to Robinson due to the nature of the place he explored. In his discussion of mountains he argues against the 'late Theorists… [and] a Spiteful Virtuoso' (referring to Woodward, though without naming him) and their argument that the Earth, at the Creation, was 'mathematically round, without Mountains, Hills, or Vallies, as if these exuberances of its Surface, like Warts and Wens, were the Deformities of it.'[110] In this regard Robinson was on the side of John Ray, who thought that mountains served eight specific divine ends, including forming political boundaries, and encouraging the flow of rivers which brought mineral fruitfulness down from the mountains and onto the 'meadows and levels'.[111] Robinson styles the argument regarding mountains as one regarding God's Providence: critique of the landscape was inherently critique of God:

> the God of Nature hath made nothing in vain, but for Good only, being all ordered by Counsel, Wisdom and Providence. / To which we shall subjoin, that Providence hath made them all in some measure useful to man.[112]

Mountains, then, rather than deformities on a once pure Earth, were instead provided both for the visual entertainment of man, and to give the appropriate topology for rain and wind, and providing the environment for a 'Set

[110] Ibid., 'vindication', p. 6.

[111] Ray, *The wisdom of God*, pp. 199-203; Gordon L. Davies, 'The Concept of Denudation in Seventeenth-Century England', *Journal of the History of Ideas* 27 no. 2 (1966), p. 281.

[112] Robinson, *of Westmorland and Cumberland*, 'vindication', p. 67.

of Vegetables peculiar to their cold and elevated Soil, and most proper and agreeable with the hot Natures of Sheep and other Creatures bread upon them'.[113] But when it comes to the original creation his paraphrase of Genesis, while unusually explicit, gives a view remarkably similar to most of those he argues against elsewhere. For instance regarding genesis 1:2, he mirrors Burnets discussion, talking of the earth as created from 'a confused Mass of Matter, consisting of Solids, Fluids, and Volatiles, all jumbled together'. In it he refers to Bishop Patrick's recent 'Excellent Comment upon the First Chapter of Genesis', which argued that as the "spirit of God moved upon the Face of the Waters" life was created in the water first. This leads us in to a discussion of fossils, as Robinson draws the conclusion that the marine animals and shells

> which we meet with generated in Sand and Gravel, being not Loco-motive, and the first Products of the Waters, might be left behind upon the first Division of the Waters, and the draining of this Earth; and so with the other solid Strata and Sediments, be petrified into a stony Substance.[114]

Robinson based this discussion partly on his biblical criticism, and partly upon having 'seen the Impression of Fern, Heath, and other Vegetables in an excellent Collection of such Rarities of Nature, made by our present Lord Bishop of Carlisle.' Collections of exceptional rarities such as this, along with fossils, which he referred to as 'imprints, which Robinson had seen on the walls of collieries which were so beautiful 'that nothing but the Author of Nature it self

[113] Ibid., pp. 3-5.

[114] Ibid., 'vindication', pp. 17-18.

could produce such excellent Workmanship',[115] demonstrate for Robinson the 'plastic spirit in nature', or the mechanism by which Nature operated without direct interference from God.[116] The walls of collieries were imprinted so beautifully that fossils must, Robinson argues, be natural; though he partially disagrees with the theory of the Deluge supported by most of his predecessors, as he sites fossils as originating from well before the Deluge:

> It seems most probable, that those Fir-Trees, buried under Ground in Lincolnshire, were brought thither by the Devastations made by Noah's Flood: But it cannot be imagined, that those shell-Fish should be lodged and petrified to Stone, upon the Tops of high Mountains, and inclosed in the middle of hard Rocks by that general Flood; but it seems more likely, that when God by the Diversion of the Waters, made the dry Land to appear, these shell-Fish, which were not Loco-motive, were left behind, and by the general Petrefaction, with the rest of the new solid Strata, were petrified into Stone.[117]

Richard Blackmore's (1654-1729) *The Creation* proves the Deity's existence and choices from the 'structure and qualities of the earth and sea' in book one, in a similar style of discussion to earlier physico-theological texts, before expanding to include the whole solar system in book two.[118] The chief tenet of physico-theology, from Ray through to William Derham (1657-1735)

[115] Ibid., p. 31.

[116] William B. Hunter, Jr., 'The Seventeenth Century Doctrine of Plastic Nature', *The Harvard Theological Review* 43 no. 3 (1950).

[117] Robinson, *of Westmorland and Cumberland*, p. 33.

[118] Richard Blackmore, *Creation: a philosophical poem. In seven books* (London, 1712).

who was rector of Upminster and published *Physico-Theology* in 1713, was that the condition of the world was due to wise design, not chance. So the study of nature, alongside that of the bible, was the path through which God could be understood. Robinson, in his "moral conclusions", puts the intention as to:

> lay down such Arguments, as are most proper to Convince and Confirm the more sensible part of Mankind, that there is a God, that by his Omnipotent Power made the World, by his Infinite Wisdom contrived it, and by his Providence preserves it in Being.[119]

Throughout the debates above the idea that God had designed the world was not in question, it was taken as a self-evident truth. The Mosaic chronology of the Earth, which was discussed by all of the county natural historians as mentioned above, gave this truth a chronological aspect. While there were debates as to whether the Earth had continued to change after the Flood or not, all those mentioned above, and their regular correspondents, agreed that the landscape itself formed part of a 'Providential scheme of history leading from Genesis to Apocalypse.'[120] Wilkins referred to *The Beauty of Providence* in a text in which he advocated passive submission to Providence in times of suffering (in this case, for those in 1649 who had been affected by

[119] Robinson, *of Westmorland and Cumberland*, 'vindication', p. 38: though note, page references 20-35 were missed out by the printer, i.e. it's the 23rd page of the vindication.

[120] Martin C. Battestin, *The providence of wit : aspects of form in Augustan literature and the arts* (Oxford, 1974), p. 50.

recent church and state events).[121] On the other hand, for most in the mid-seventeenth century the progress of time was both ordained *and* held negative connotations. Who could behold a ruined landscape in the period following the Civil Wars without a conception of the moral idea of transience, 'Falling beneath the ruthless hand of Time'?[122]

As the seventeenth century progressed, though, the debate over whether conditions improved or regressed as time went on shifted, and as historians have demonstrated since R F Jones published *Ancients and Moderns* in 1936 a sense of progress through time took hold within intellectual culture.[123] Historical discussions of this tend to concentrate around the gradual rejection of ancient natural philosophy and its replacement with new inductive science. However a sense of progress can also be discerned in politico-religious commentary; for instance in Tillotson's interpretation of the events leading up to 1688 as God working 'for this Nation against all the remarkable attempts of Popery, from the beginning of our Reformation.'[124] Likewise, commentary on practical matters and the lives and conditions of the people of England; as seen

[121] John Wilkins, *A discourse concerning the beauty of providence in all the rugged passages of it very seasonable to quiet and support the heart in these times of publick confusion* (London, 1649).

[122] Joseph Warton, *The enthusiast, or, The lover of nature a poem* (London, 1744), p. 19.

[123] Ronald Victor Sampson, *Progress in the age of reason : the seventeenth century to the present day* (Cambridge, Mass., 1956); Jones, *Ancients and moderns; a study of the rise of the scientific movement in seventeenth-century England*; Stanley Rosen, *The ancients and the moderns : rethinking modernity* (New Haven, 1989); Robert A. Nisbet, *History of the idea of progress* (New Brunswick, 1994); Peter Harrison, 'Early Modern Science and the Idea of Moral Progress', in Donald A. Yerxa (ed.), *British abolitionism and the question of moral progress in history* (Columbia, 2012).

[124] Tillotson, *The works*, vol. 1, p. 301.

in John Aubrey's remarks regarding the improvement in farming practices: 'Till the beginning of the civil wars wheat was rarely sown hereabout; and the brown bread was barley: now all the servants and poor people eat wheaten bread.'[125]

The following section discusses how the sense of progress (or regress) through time impacted upon the interpretation of the landscape in county natural history. It demonstrates that the county natural historians each naturalised God's grace within the localities around them, pointing to the importance of 'place' in their writings. Secondly, the section suggests that the moral relationship between landscape and man was situated by county natural historians in theological context: health, character, and morality were properties of the God-drawn landscape, above and beyond the people who resided within it. Thomas Robinson is the county natural historian who displays the most direct interest in the idea of a temporal landscape, claiming that:

> God Almighty made all the Veins of Metal in the same Condition as we now find them… [as] an affront to Nature, in denying her a productive Virtue in this, which is allowed her in all sublunary Things.

As well as discussing Nature's productive virtue as a religious problem, he cites specific examples of the changing Earth, for instance an iron mine in Tuscany that regenerates every fifteen to twenty years.[126] Whether posing a theoretical problem or citing historical examples, Robinson's suggestion that the

[125] Aubrey, *Aubrey's natural history of Wiltshire (reprint)*, p. 50.

[126] Robinson, *of Westmorland and Cumberland*, pp. 68-69.

Earth changes according to her own 'productive virtue' suggests that a historical understanding of nature is both possible and necessary.

This productive virtue was situated by Robinson within a landscape of balance which demonstrates the continued existence of a conception of the "Scale of Beings" and an analogous relationship between physical, moral and spiritual levels.[127] In a particularly explicit example Robinson draws out the analogy between the Veins and the Rivers:

> as all the great Veins in the Bodies of Animals do meet in the Neck, and from thence are divided… so the greater Nerves… being divided into lesser and smaller Nerves, are the Conduit-Pipes through which Life, Motion, and Activity is conveyed… In like manner, all the great Rivers upon this Earth… taking in those Waters flowing from the lesser Veins, until they increase to Navigable Rivers.[128]

We can see clearly the resemblance between Robinson's discussion and the ideals put forward by other intellectuals of the period such as the physician George Cheyne (1671/2-1743):

> All the Integral Parts of Nature, have a beautiful Resemblance, Similitude, and Analogy to one another, and to their Almighty Original, whose Images [are] more or less expressive according to their several Orders and Gradations, in the Scale of Beings[129]

[127] Wasserman, 'Nature Moralized: The Divine Analogy in the Eighteenth Century', p. 40.

[128] Robinson, *of Westmorland and Cumberland*, pp. 24-25.

[129] George Cheyne, *Philosophical principles of religion. Part II. Containing the nature and kinds of infinites ; their arithmetick and uses, and the philosophick principles of reveal'd religion* (London, 1716), p. 5.

However, with the exception of this traditional discussion of the rivers and the veins of the nation, which had been a common motif since Camden, analogy is not commonly seen in the county natural history. Instead, the focus is upon balance and a moral relationship between the landscape and the people who inhabit(ed) it. For instance Robinson discusses the Moon as the *primum frigidum* to the sun's *primum calidum*: without the moon the Sun would 'burn… the Earth up to a Crust', without the sun 'the Sea and Earth would have been frozen to the induration of Icy Marble'; it's the balance which makes Earth the place, ideal for human habitation, that it is.[130] The moral relationship is seen in discussions of past actions of men upon the landscape; for instance in John Aubrey's commentary on Wiltshire's Ruins: 'for a man to give a guess what noble buildings etc. were made by the piety, charity, and magnanimity of our forefathers.'[131] But the most striking discussion is that of the landscape, as created by God, as a moral driver in itself:

> the Author of Nature seems to have created them [metals and ores] in that Obscurity and Depth, and to have immured them in hard Rocks, on purpose to hide their Causes, and to give a Check to the Ambition of Man.[132]
>
> All Mines of Coal, Lead, Iron, Copper, &c. have their natural Position in the Earth, either upon Flats, or in Veins… thus Providence hath been pleased to order it, that all the Mines, and those solid Strata, which are their natural Covers, should (for the Ease and Benefit of Man) have a natural Rise to the

[130] Robinson, *of Westmorland and Cumberland*, p. 12.

[131] Barber (ed.), *The worlds of John Aubrey : being a further selection of Brief lives, together with excerpts from his writings on antiquities, science and folklore*, p. 177.

[132] Robinson, *of Westmorland and Cumberland*, p. 67.

> Surface of the Earth, that, by their breaking out upon the Precipices of Mountains and Hills, or by the sides of Rivers, the Miners might be incouraged to make their Trials with great Advantage[133]

The two above quotes demonstrate the picture Robinson paints through the work as a whole: resources are distributed for the benefit of man; but also to test us. Rather than providing the resources for easy exploitation, God has left us clues to their location as described in the second quote above. The complexity of interpreting these clues can both check and inspire our ambition, which associates an enquiring mind with God's world. This is a picture of a God who, through the plastic virtue of nature, 'hath ordered all Things for the Benefit of Man, and to encourage his Industry.'[134] The natural landscape demonstrated, for Robinson and for many of his contemporaries, the virtues and moral properties of God and, in turn, the expected behaviour of man.

Godly grace was naturalised in the provision of resources for man in proportion to his needs and in a manner encouraging his moral behaviour, with the expectation, though rarely voiced, that society would organise itself in such a way as to follow this bounty. In a section of Morton's book devoted to springs and other watercourses, he describes 'Pisford Field, a Field of about 1200 Acres, [in which] there are at least 200 Springs'.[135] The focus of the description is upon how providential the location of these springs is, how it supports society as it was organised by contemporaries. The soil in this particular field is of a type

[133] Ibid., p. 77.

[134] Ibid., p. 78.

[135] Morton, *of Northampton-shire*, p. 315.

which does not hold water, and is raised in comparison with surrounding land, which would, Morton surmises, mean that in a dry summer there would be no water for the cattle which are grazed there, were it not for the springs. 'In that little Tract, we have one of the many instances of the Care and Wisdom of the Great Creator, in supplying the several Parts of the Earth with such a share of Water, as was suitable and requisite.'[136] God, then, was directly responsible for the fertility of the locale that Morton was examining; and especially for its water:

> her Supplies of Water are all from within herself, that she imparts to many Counties, and receives Water from none; many Brooks and Rivers running out of this County into others, and none out of others into this…'Tis farther Observable, and a natural and unwrested Observation, That the Rivers of Northampsonshire are so equally and duly rang'd, and distributed, as if they ran in Channels contribed, and cut by Art, and Labour, to convey a competent Share of Water unto Every Part[137]

While Morton, investigating the relatively flat and well-watered Northamptonshire, finds evidence of God in the waterways, for Leigh, as for Robinson, it is the mines which take precedence. We are told that there are 'no Counties in England affording so great a Variety of Mines, Minerals and Metals, with other choice Products, and the most surprising Phenomena of Nature', when compared with *Lancashire, Cheshire and the Peak*.[138] Morton, Leigh and Robinson are each drawing on the physical landscape of the counties on which

[136] Ibid.

[137] Ibid., pp. 2-3, 7.

[138] Leigh, *of Lancashire, Cheshire, and the Peak*, 'epistle dedicatory'.

they focused. Each find God's plans in the landscape around them: Northamptonshire *is* full of rivers, springs, brooks, creeks, and other beautiful and varied waterways; while the more mountainous tracts from Westmorland to the Peak were, and to an extent are, better known for their mined resources. God's grace provides the explanatory force in all three cases, but it is the physical landscape and the places being explored which are the object of explanation. A similar sense of God being inherent in the landscape around individuals (specific places) is demonstrated in contemporary poetry, such as these examples from William Cowper:

> —Not a flow'r / But shows some touch, in freckle, streak, or stain, / Of his unrivall'd pencil—[139]
>
> England, with all they faults, I love thee still… / I would not yet exchange thy sullen skies, / And fields without a flow'r, for warmer France / With all her vines[140]

None of the county natural histories explicitly projected this naturalisation of God's plans, or the correlating idealised morality, back onto society. Their comments were limited to descriptions of the manner in which nature had been organised by the Creator to provide for men, not that men should adapt the organisation of society to more efficiently utilise the provisions given by God. However, while *the Tour* barely mentions God, Defoe's conception is explicitly exploitative: we, the British, are to re-organise society, using nature's

[139] W. Cowper, 'The Task (1785)', in H.S. Milford (ed.), *Poetical Works* (London, 1967), vol. 6, pp. 240-242.

[140] Ibid., vol. 2, pp. 206, 212-214.

bounty, to suit our own desires, or rather, those of London which is the beating heart of the nation. Areas that are self-sufficient, or cut-off from London in any way, are portrayed in entirely negative terms: Cornwall, for instance, is 'said to be inhabited by a fierce and ravenous people'.[141] Geoffrey Sill has referred to this portrayal as projecting 'a moral imperative pointing the way towards England's industrialisation'.[142] So what for the county natural historians was God's grace in providing for people had become, just ten years after Morton and Robinson's work, an exploitable resource, and one which men had a moral duty to exploit.

However, the fact that the county natural histories did not include this information does not imply that the mode of thinking displayed by Defoe, naturalising a moral imperative towards trade in the landscape, did not exist for them. Robinson, for instance, writes:

> Thus every Country hath something in Perfection, which other Countries want; and this the Divine Wisdom hath ordered for the Encouragement of Trade, and that there might be a Communication of one Nation with another, round the whole Globe of the Earth.[143]

Robinson here in some ways prefigures Defoe, though with the added theological implications, in suggesting that the differences between "countries" (which can be read as 'local area' in this case, as he is discussing differences within Westmorland and Cumberland) act to encourage trade. However, this is

[141] Defoe, *A tour through the island of Great Britain*, vol. 1. p. 385.

[142] Geoffrey M. Sill, 'Defoe's Tour: Literary Art or Moral Imperative?', *Eighteenth Century Studies* 11 no. 1 (1977), p. 83.

[143] Robinson, *of Westmorland and Cumberland*, p. 79.

one comment by Robinson and is not used as a structuring principle for his work. Likewise, Aubrey makes the occasional remark regarding the relationship between the landscape and the qualities and personalities of those within it. His, unlike Robinson's, hark back rather than forward, sounding more like the analogous reasoning of Renaissance writers:

> Tewkesbury Vale and Evesham Vale breed fair lusty tough people. At Huntley in Gloucestershire, the nature of the people breaks with the soil; which there the sand leaves and the wet woodsere soil comes, and so the north part of Wiltshire. In the sandy part the natives are of muddy complexion, hard or black-eyed, quick; and the other slow, pale, long-visaged, drawling voice, spiteful, and as a result inhospitable, always cold in their feet, anxious, malicious, bigots and witches. According to the saying, you may as soon break your neck as your thirst among 'em; on the other hand, in Herefordshire they will ask strangers as they ride along by their horses, invite them to drink.[144]

The correlation between locale and the individuals within it is brought out most strongly and consistently, however, in Robert Plot's extensive discussion of the relationship between the local environment and the health of its inhabitants, which were based on conversations with locals and especially local physicians, who reported a wide series of examples, both anecdotal (that is, singular) and more occasionally general. With all of the examples found in Plot, though, it was the landscape rather than the people within it which had the

[144] Barber (ed.), *The worlds of John Aubrey : being a further selection of Brief lives, together with excerpts from his writings on antiquities, science and folklore*, pp. 201-202.

active role in creating health. For example, we are told that despite the bad airs associated with the Bogs on the Moorland, the area was:

> as healthy perhaps as the best part of the County… The Worshipful Mr. Bidduplh of Biddulph (as I was informed by diverse) having not long since had twelve Tenants all living at a time within the two parishes of Biddulph and Horton, whose Ages put together made up a thousand years[145]

However when it came to making the distinction between healthy and healthiest a more general measure was required than the anecdotal evidence given by Mr Biddulph, and this requirement was answered when Plot found that there were three Christenings to one Burial in 'Swynerton, the Village of Beech and all the Hill Country betwixt that and Trentham'.[146] The demographic, for want of a better term, research Plot conducts while wandering through Staffordshire led him to several conclusions as to the properties which would lead to the healthiest situation:

> the most healthy paces are both on the tops and descents of hills facing the north, the winds from thence blowing cool and dry, whereas those from the South are hot and moist…whatever the ancients have written in commendation of the lofty, dry, and open situations (which perhaps may be best in hotter Climes) ours in England ought neither to be without trees for shade… Nor ought the English situation to be altogether dry, but water'd if possible with a quick and clear stream.[147]

[145] Plot, *of Stafford-shire*, p. 45.

[146] Ibid., p. 38.

[147] Ibid., p. 41.

Health is, for Plot, a latent property of the landscape, which fits firmly within the humoral medical tradition, as does his reference to qualities of heat and moisture (and their respective inverses). This traditional methodology, though, comes alongside the questioning of received medical wisdom from southern Europe regarding the ideal landscape, in place of his own observations. This is one of the rare cases where Plot used the narrative descriptions to make generalisations beyond Staffordshire- though even here it is notable that he is only generalising to 'the English situation'. A similar idea of what makes a healthy landscape is given by Robinson, who refers to the northern counties as 'elevated above the rest of the Island; which exposeth the Inhabitants to a colder, yet a more healthful Air than the level Counties'.[148]

However, even when it came to the healthy landscape, county natural histories were more concerned with particular examples than general theory. One result of this was Aubrey's support for Ray's survey of plants in Cambridgeshire, and suggestion that the same should be performed elsewhere: 'God Almighty hath furnished us with plants to cure us, that grow perhaps within five or ten miles of our abodes, and we know it not'.[149] One example of a place with specific medical properties which was reported in Aubrey's *of Surrey*, and indeed it is still known about today, is Epsom Spring. Epsom is not only a medical marvel which was worthy of just over twenty pages of discussion, it was of such importance to locals that when it was stopped up by Mrs Evelyn, the Lady of the

[148] Robinson, *of Westmorland and Cumberland*, p. 1.

[149] Barber (ed.), *The worlds of John Aubrey : being a further selection of Brief lives, together with excerpts from his writings on antiquities, science and folklore*, p. 221.

Manor, it was only a year before 'Providence repaired that loss with the discovery of a new well'. The course of history conspired to ensure that the water from Epsom Spring would be accessible by men, whatever the actions of individuals.[150] And, given the non-medical properties discussed by John Toland (1670-1722) in his *Description of Epsom* (1711), and transcribed into *of Surrey* by its editor, one can see why this would be important:

> A Tory does not stare and leer when a Whig comes in; nor a Whig look sour and whisper at the sight of a Tory. These distinctions are laid by with the Winter Suit at London, and a greyer, easier Habit worn in the Country.[151]

Conclusion

As we have seen, the reduction in the role of special providence discussed at the outset of the chapter did not imply a withdrawal of God from the world or the landscape as envisaged by county natural historians. The main aim of county natural history, on the contrary, for John Morton at least was religious; as he wrote on a copy of his *Natural History of Northamptonshire*: 'I will give Thanks unto Thee, O Lord, with my Whole Heart: I will speak of all Thy marvellous Works [of Nature].[152] In this focus Morton was far from alone, as the Chapter has shown Robinson and Aubrey both strongly shared this religious impulse, and both Plot and Leigh gave indications (though less complete or comprehensive) to that

[150] Aubrey, *of the County of Surrey*, vol. 2, p. 191.

[151] Ibid., vol. 2, pp. 206-207.

[152] John Morton, *The Natural History of Northamptonshire; with some account of the antiquities. To which is annex'd a transcript of Domesday-Book, so far as it relates to that county*... with copious MS. notes by the author, p. ii.

effect. And more widely the same argument holds, for instance we can look to Robert Boyle's reflection on a naturalist as being 'not only delighted with these outward objects, that gratify his sense, but receives a much higher satisfaction, in admiring the knowledge of the author.'[153] Admiring God's world, for these men and many others around the turn of the Eighteenth Century, also implied an attempt to understand it through physico-theology. This, as my discussion of the debates surrounding the origin of fossils has shown, was a dual discussion: Nature could not be correctly interpreted without reference to the Bible; and the Bible could not be correctly interpreted without reference to Nature. It is interesting, though nothing more than that, to note that it was Biblical interpretations which convinced Morton and others that fossils were the remains of organic creatures.

Through all of the county natural histories the landscape was explored as God's world. Regarding health, it was the God-given landscape which was healthy or not, the people within it and their longevity merely indicators as to the landscape's properties. Likewise, the water which we needed and utilised was, whether stream or spring, provided by God. As such, the moral imperative embedded in county natural history was to come to know God's world which, in itself, would enable gentlemen to build their houses in the proper, 'best', situation for their own health. The lack of conjectures regarding what natural or medical processes made particular situations healthy, or over the nature of the

[153] Birch (ed.), *The works of the honourable Robert Boyle in five volumes : to which is prefixed the life of the author*, 'of the usefulness of natural philosophy' vol. 1, p. 424.

link between a landscape and the personality of its inhabitants, is instructive. In fact, throughout the county natural histories we see more attempts to deduce God’s providential ordering of the world by perceiving his Grace in the landscape than we do attempts to deduce natural laws. So while historians of science may be right to suggest that the “things” found in natural histories were used as empirical facts by contemporary natural philosophers and exploited by those of a more utilitarian bent,[154] county natural history also had an important role to play in contemporary physico-theological discussions, and was a valued cultural pursuit in itself in part through its religious connotations.

[154] Poovey, *A History Of The Modern Fact*, pp. 9-13; Yeo, *Encyclopaedic visions : scientific dictionaries and enlightenment culture*, p. 64; Cook, 'The Cutting Edge of a Revolution? Medicine and Natural History near the shores of the North Sea', pp. 45-61; Shapin, *The scientific revolution*, p. 32.

Conclusion

The central argument of the thesis has been that county natural history was "thoroughly English": that agency within the process by which it was created came primarily from within England, and also that the genre represented the thorough description of some of the constituent parts of the country. As Edward Casey and J. E. Malpas have argued, it is particular places to which we respond as individuals.[1] In the seventeenth century virtuosos such as the county natural historians focused their efforts upon describing the differences between places, showing in many ways a similar conception of what "place" meant, and a similar distaste for generic "space". The utilisation of county-specific conceptions of place enabled Plot to tap into the pride local gentry in Oxfordshire felt at their association with Royalty, and Morton the desire of the gentry in Northamptonshire to have their lands described and represented textually. Thus, both contributed to the continuation of these county self-conceptions, and were successfully able to gain patrons and support.

The manner in which the landscape is represented and constructed provides a window into wider conceptions of identity, as well. Here, the thesis suggests a possible method of filling the gap between our understandings of the Elizabethan and post-1720 national constructions, represented by Camden and Defoe historically, Helgerson and Colley historiographically, though a wider source base would be necessary to prove this argument. In the turbulent period

[1] Casey, *Getting back into place : toward a renewed understanding of the place-world*; Malpas, *The place of landscape concepts, contexts, studies*.

from Civil War to the aftermath of the Revolution, the nation was constructed from its heterogeneous parts, only brought together by projects such as Plot's to map the differences in the natural and man-made landscape across the nation. For the county natural historians, both the previous analogical rhetoric and the utilitarian tone of Interregnum natural history (which would re-emerge in the eighteenth century and go on to dominate) were insufficient. Instead, place and difference, and all of the displays of nature which could be found therein, were to be celebrated as part of God's world.

Adrian, then, was right in his *Local Negotiations of English Nationhood* to point to the way in which communication between individuals from different locales encouraged the discussion of locality itself. Through the 'nodes' of the Royal Society, Oxford University, the Bodleian Library, and the Ashmolean Museum in particular, the county natural historians communicated the particularities of the counties which they were studying. Without these networks, and without intellectually active provincial gentry, the comparative element of the discipline would have been impossible. Where Adrian errs is the time-line he ascribes which ends in 1680. As I have shown, locality and differentiation was every bit as important to the virtuoso of the 1710s: Morton's *Of Northamptonshire* was no less celebratory than Plot's *Of Staffordshire* had been. It also retained Plot's combination of natural historical and antiquarian topics, though the full title *The Natural History of Northamptonshire, with some Account of the Antiquities*, perhaps indicates that this combination was beginning to creak.

In the decades following the publication of Morton's *of Northamptonshire* in 1712, natural history and antiquarianism again became separate genres of writing (even if, often, both were undertaken by the same individuals). The most pertinent example of this is the work of William Borlase, who worked extensively in both disciplines (and others) regarding his native Cornwall. Like his predecessors the county natural historians, Borlase was admitted as a Fellow of the Royal Society in 1750, and four years later published his *Antiquities of Cornwall*. Four years after that, he published *The Naturall History of Cornwall*, and throughout these years he regularly sent fossils, antiquities and other objects of interest, for thirty years or more, to the Ashmolean. His interests also covered physico-theology, as demonstrated by his 'Private thoughts concerning the creation and the deluge' (finished 1769, but unprinted).[2] In short, Borlase's interests spanned everything that the county natural historians were interested in, yet he felt the need to separate his works out as separate genres.

In approaching antiquarianism as a local pursuit and along similar lines to the county natural historians, Borlase was hardly alone. Antiquarianism through the eighteenth century remained a pursuit largely undertaken by men of good social standing, and indeed undertaking antiquarian study remained a mark of gentlemanly status. As a discipline, it retained many of the features which this thesis has explored: a focus on the presentation and preservation of testimony from locals, personal description, and a sense of personal fascination with

[2] On Borlase, see Janković, *Reading the Skies*, pp. 105-113.

remnants of the past. And it retained the focus upon the pursuit of apolitical and uncontroversial "truth", set against both philosophical argument and utilitarianism. And, indeed, antiquarianism continued to be undertaken predominantly within a county framework, despite the erosion of the county framework in other contexts as the nation became more integrated. While much had changed as regards the socio-cultural setting in which antiquarianism took place, the "History and antiquities of …shire" remained a popular genre.[3]

On the other hand, work which self-defined as natural history had, with the exception of the odd work like Borlase's *of Cornwall*, moved from the particular to the general- to what we might term the "science" of natural history- and now largely excluded discussion of antiquities. Here there are both marked similarities to and differences from the way in which natural history was pursued by Aubrey, Plot, Leigh, Robinson and Morton. The idea, discussed in Chapter Four, that the investigation of nature was the investigation of a world created by God, but a God that does not intervene directly through Special Providence, remained common well into the eighteenth century. However, rather than itemising specific instances of God's grace, the focus of natural history, in a host of areas, changed to become the 'systematic study that attempted to normalise… to reduce it to some kind of regularity'.[4] That is to say, the aim, rather than attempting to create individual narratives of things and places as the county natural historians had done, was to discern and understand the laws that

[3] See Sweet, *Antiquaries*, pp. 37-40 and passim.

[4] Jan Golinski, *British Weather and the Climate of Enlightenment* (Chicago, 2007), p. xii.

God had set in motion (through the production of facts to be considered by natural philosophers), and (for natural history itself) the kinds of creature and object He had created.

The intention underpinning most natural history in the eighteenth century, then, can be distinguished as the increasingly dispassionate description and categorisation of everything, which as Chapter Three discussed has been labelled "truth-to-nature" by Lorraine Daston and Peter Galison. While county natural historians focused on description alone, the natural historians of the eighteenth century, in line with the description of "truth-to-nature" offered by Daston and Galison, aimed to produce characteristic exemplars of 'kinds' of natural thing.[5] Through the production of these exemplars, natural historians in the eighteenth century and beyond wanted to produce schemas or taxonomies linking the "things" together. This was the ultimate aim for most eighteenth century natural historians, whether we speak of John Williams' *The Mineral Kingdom* or David Hume's *Natural History of Religion* (1757), as well as the plethora of English scholars who were inspired by Carl Linnaeus' more formal taxonomic structure. And, provincial scholars who undertook natural history, by and large, did so with the explicit aim of contributing to these discussions.[6] Indeed, there is such breadth of study collected under the banner of "natural history" through the eighteenth century that Rhoda Rappaport suggests that 'to

[5] Daston and Galison, *Objectivity*, p. 42.

[6] Golinski, *British Weather*, pp. 203-213

write a history of this pervasive genre is not feasible.'[7] But, we can speak of a genre of writing unified by detailed description and a focus upon classification.

The explanation for these changes in the meaning of natural history and the methods by which it was undertaken is, as Rappaport's comment suggests, not a simple one. To some extent, we must acknowledge the role that increasingly rapid and pervasive communication networks played, even among provincial natural historians: while Morton's correspondence was limited to English and Welsh scholars, Borlase had an enviable European network.[8] This, as a more general point, had dual consequences. Firstly, wider correspondences, one might argue, simply by virtue of their existence might lead to the search for correspondences in the objects of study, and consequently to classificatory systems of sorts. Secondly, natural history in late seventeenth century Europe already had several systematic or classificatory models available to it (including John Ray's), as has been shown by Brian Ogilvie's *Science of Describing*. As the depth of correspondence and reach of printed works extended through the eighteenth century, debate regarding these philosophical models would also spread further than before, inflecting provincial gentlemen-naturalists as well as philosophers.

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[7] Rhoda Rappaport, 'The Earth Sciences', in Roy Porter (ed.), *The Cambridge History of Science Volume 4: Eighteenth-Century Science* (Cambridge, 2003), p. 418

[8] On the role of correspondence networks in eighteenth century natural history, see especially: D. E. Allen, 'Natural History in Britain in the Eighteenth Century', *Annals of Natural History* 20.3 (1993), pp. 333-347; Cook, *Matters of Exchange*; Delbourgo and Dew, *Science and Empire*.

The changing religious background was also hugely influential. Special Providence had given way to Ordinary Providence in the county natural historians' conception of God setting springs in fields to ensure they were watered. However, by the middle of the eighteenth century a more prominent notion was that of God designing the laws by which nature operated, at which point natural history's goal became the production of descriptions which could be generalised and classified to discover those laws.[9] This thesis, therefore, has not sought to challenge the overall narrative put forward by historians of science of a move from an emblematic relationship with nature towards the perception of nature as disenchanted, controllable for the benefit of man, and best understood by reference to immutable physical or natural laws. Nor has it challenged the wider narrative put forward by cultural historians of the conception of the nation evolving from one in which rivers form the veins and arteries of the figurative nation to a unified trade network in which roads became the dominant shaping factor. Both of those transitions, when looking over the seventeenth and eighteenth centuries as a whole, appear entirely valid.

However, I have argued that in addition to looking for vestiges of previous conceptions of natural history, antiquarianism and conceptions of locality, and looking for glints of the future forms of each, we should be aware of more transitory forms of thought, other ways of thinking about both the natural world and the nation. In the period following the Civil Wars, Interregnum and

[9] This argument is put forward particularly neatly in Peter Harrison, 'Natural History', Harrison, Numbers and Shank (eds), *Wrestling with Nature: From Omens to Science* (London, 2011), pp. 117-148.

Restoration, in which the basis of knowledge was highly contested, the county natural historians chose to focus upon the description and preservation of individual objects and observations, spanning both the everyday and the ordinary, but above all the local.

As a result of making this argument for the importance of a focus on the late-seventeenth century, the thesis has made four contributions to particular historiographic fields. Firstly, Chapter One argued that county natural history was a genre descended from local antiquarian and chorographic works in the pre-Civil War period, and that it occupied a similar socio-cultural space to the earlier local historical endeavours. In making this argument, I was providing a link between the studies of Tudor and early Stuart antiquarianism by Vine and Broadway and that of eighteenth-century antiquarianism by Sweet.[10] While the Civil War and Interregnum in some ways provided a generational gap, temporarily halting some local research, the turbulent situation also inspired a revival of an instinct to preserve which had not been equalled since the dissolution of the monasteries over a century earlier. Following the Restoration the reign of Charles II provided a supportive environment for the investigation of county natural history, extending patronage networks and also demonstrating a personal curiosity in his travels to Wiltshire in particular. There were changes, and in particular after the Restoration subscription replaced individual patrons as

[10] Vine, *In defiance of time*; Broadway, *'No historie so meete'*; Sweet, *Antiquaries : the discovery of the past in eighteenth-century Britain*.

the mainstay of support for the county natural historian, but as I have shown there is a meaningful narrative to tell through the period.

Second, the thesis has demonstrated that the socio-cultural continuation of antiquarianism represented by county natural history brought with it a methodological focus upon the narrative and the everyday. This was not *just* curiosity inspired by the wondrous, but also by the everyday; an important distinction on which the current historiography on conceptions of curiosity is largely silent.[11] The focus on the everyday came through in the methodologies employed by county natural historians, which in Chapter Two were shown to include textual research, questionnaires, extensive conversation with locals and collection, and experimentation. In the area of testimony in particular the thesis has shown that county natural historians can be seen as exemplars of both Shapin's stress on social decorum and Shapiro's focus upon evidence from non-gentle witnesses.[12] These practical methodologies of collecting and assessing information were allied with a series of literary technologies which were applicable to both antiquarian and natural historical study. All of this serves to further strengthen the bridge between the investigation of humanist scholarly

[11] Daston and Park, *Wonders and the order of nature*; Benedict, *Curiosity : a cultural history of early modern inquiry*.

[12] Shapin, '"A scholar and a gentleman" : the problematic identity of the scientific practitioner in early modern England'; Shapiro, 'Testimony in seventeenth-century English natural philosophy: legal origins and early development'.

practices and histories of the 'new science' through the latter seventeenth century.[13]

Third, the thesis argued that county natural historians were interested more in particulars, than in generalities and that their intentions in producing natural knowledge were conditioned by a concept which I have termed fidelity, or faithful representation. One might speculate that the Royal Society's attempts to avoid religious and political controversy found their peak in the county natural history's use of faithful and honest narrative; were it not for the counter-example of antiquarians such as Chauncy being accused of giving overdue precedence to Catholic sites.[14] The county natural historians in general did not either intend to provide deracinated particulars or evidence for wider theories. What they were looking to do was to faithfully record and represent the world around them. Where they were making greater claims, as regarding fossils which were discussed in chapter four, they did so in a religious context; not natural philosophy. Hence they demonstrate an alternative to the style of natural history investigated by most historians of science in the wake of Poovey's "Modern Fact".[15]

Fourthly, the thesis provides a critique of the application of our notion of 'utility' to the seventeenth century. As suggested by Poovey's modern fact,

[13] Blair, 'Reading Strategies for Coping with Information Overload ca. 1550-1700'; Blair, 'Humanist Methods in Natural Philosophy: The Commonplace Book'; Swann, *Curiosities and Texts*; Feola (ed.), *Antiquariansim and science in urban networks, ca 1580-1700*.

[14] Knights, *The Devil in Disguise*, pp. 59-61..

[15] Yeo, *Encyclopaedic visions : scientific dictionaries and enlightenment culture*; Yeo, 'Between Memory and Paperbooks: Baconianism and Natural History in Seventeenth-Century England'.

and seen across a wide swathe of historiography, the scientific revolution is itself presented essentially as a slow and multifaceted transition towards treating nature in a 'rational', utilitarian way. In problematizing this transition I am building upon what I term the cultural history of empiricism, pieced together from historical geography and other cultural fields, which has demonstrated the wider meanings of natural knowledge in the period. For the county natural historian, the investigation of the world was not a precursor to the exploitation of its resources, nor a method of recovering ancient knowledge, it was an end in itself. Or rather, the investigation and description of the world was an end in itself, as part of a project to come to know God's world.

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